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Surface Water, Sediment, and Groundwater Sampling Report September 2002 McCormick & Baxter Creosoting Company Site Portland, Oregon

DEQ Task Order No. 88-97-39

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Prepared for:

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65

Table of Contents

Table of Contents (cont.)

List of Tables

Table

List of Figures

Figure

List of Figures (cont.)

Figure

List of Abbreviations and Acronyms

ACLs	alternative cleanup levels
B-a-P	benzo(a)pyrene
BGS	below ground surface
C	Celsius
COCs	contaminants of concern
CPAHs	carcinogenic PAHs
DEQ	Oregon Department of Environmental Quality
DGTs	diffusive gel thinfilms
DNAPL	denser-than-water nonaqueous phase liquid
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
FSP	field sampling plan
ft/ft	foot per foot
FWDA	former waste disposal area
HPAHs	high-molecular-weight PAHs
LNAPL	lighter-than-water nonaqueous phase liquid
LPAHs	light-molecular-weight PAHs
McCormick & Baxter	McCormick & Baxter Creosoting Company
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/L	milligrams per liter
MSD	matrix spike duplicate
NAPL	nonaqueous phase liquid
NCA	North Creek Analytical, Inc.
NGVD	National Geodetic Vertical Datum
OSU	Oregon State University
PAHs	polynuclear aromatic hydrocarbons
PCP	pentachlorophenol
QA	quality assurance
QC	quality control
RAs	remedial actions
RPDs	relative percent differences
SIM	selective ion monitoring
SPMDs	semi-permeable membrane devices
SVOCs	semivolatile organic compounds
TCDD	tetrachlorodibenzo-p-dioxin
TEQ	toxic equivalency quotient
TFA	tank farm area

1 Introduction

Ecology and Environment, Inc., (E & E) under contract with the Oregon Department of Environmental Quality (DEQ), prepared this September sampling event and remedial actions (RAs) semiannual report for the McCormick & Baxter Creosoting Company (McCormick & Baxter), Portland Plant, site located in Portland, Oregon (see Figure 1). The site, a former wood-treating facility, is located along the Willamette River at 6900 North Edgewater Street. This document was prepared under Task Order No. 88-97-39.

This document describes the September sampling event, which took place from September 5 to 26, 2002. The sampling event was a joint effort between the United States Environmental Protection Agency (EPA), Region 10; DEQ; and Dr. Kim Anderson, Oregon State University (OSU), to collect surface water, pore water, groundwater, and sediment samples for analysis of polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), and metals (arsenic, chromium, copper, and zinc). Also described in this document are routine E & E site activities that occurred from July 1 to December 31, 2002. These activities usually are documented in a separate semiannual report.

1.1 Scope of Investigation

The purpose of the sampling efforts was to provide data for the following interpretive objectives:

- To evaluate the interface zone between the site groundwater and the Willamette River adjacent to the site;
- To define baseline conditions before construction of the subsurface barrier wall and sediment cap;
- To continue monitoring of site groundwater;
- To assess potential water quality impacts to the Willamette River;
- To evaluate the extent of surface water impacts (i.e., mixing zone);

- To further the understanding of groundwater/surface water interactions;
- To assess the relationship between bulk sediment chemistry and pore water chemistry;
- To evaluate the protectiveness of the proposed sediment cap;
- To determine surface water concentrations upstream of the McCormick & Baxter site;
- To aid in re-evaluation of groundwater cleanup goals by testing the current conceptual site model; and
- To assess sampling techniques for development of a long-term monitoring plan for the sediment cap.

1.2 Report Organization

Following this introduction (Section 1), the surface water, sediment, and groundwater sampling report is organized as follows:

- **Section 2, "Sampling Methodologies."** This section presents the site sample locations, sampling methodologies, and analytical schedules;
- **Section 3, "Summary of Results."** This section presents the results from the sampling event and includes the surface water, pore water, sediment, and groundwater media. The routine activities usually described in a separate semiannual report also are addressed in Section 3. Specifically, this section describes the nonaqueous phase liquid (NAPL) monitoring and extraction activities, and semiannual groundwater monitoring; and
- **Section 4, "Summary."** This section presents a summary of the results discussed in Section 3.

Tables and illustrations are included in tabbed sections at the end of the text portion of the report.

The following appendices supplement the text:

- **Appendix A.** This appendix contains copies of the field sampling plans (FSP), used by EPA, Region 10, and DEQ, and the analytical report produced by OSU;
- **Appendix B.** This appendix contains a copy of the certified laboratory analytical data including EPA, Region 10, and E & E memoranda evaluating the laboratory data for the September event;

- **Appendix C.** Tide charts and plots of transducer data are contained in this appendix;

- **Appendix D.** A summary of site activities performed during the semiannual reporting period is included in this appendix;

- **Appendix E.** Certified laboratory analytical data for the semiannual reporting are contained in this appendix; and

- **Appendix F.** This appendix contains tables of all analytical data for samples of all media types.

2 Sampling Methodologies

This section describes the methodologies used to collect surface water, pore water, sediment, and groundwater samples during the September 2002 sampling event. In addition, this section describes the methods used to collect groundwater samples from upland site wells as part of the RAs semiannual reporting requirement.

2.1 Methodologies

Two EPA, Region 10, teams (shore and dive teams); DEQ; and OSU collected samples during the September 2002 event. Surface water, pore water, and sediment samples were collected by EPA, Region 10, personnel adjacent to and within the river. Shore samples were collected adjacent to the river and in less than 3 feet of water. Dive team samples were collected in the river. DEQ collected groundwater samples using nested mini-piezometers and pore water samples using flux chamber methods. DEQ samples were collected from identified NAPL seep areas. DEQ also installed transducers in a stilling well at the railroad bridge and in monitoring well MW35s in Willamette Cove. Sample collection took place during ebb tide, with the exception of OSU sampling, to ensure that water would be collected at a time when groundwater was discharging to surface water. OSU surface water sampling was completed over a two-week period using semipermeable membrane devices (SPMDs) and diffusive gel thinfilms (DGTs). On behalf of DEQ, OSU collected surface water grab samples at six of the SPMD locations at the time of deployment. OSU also collected surface water grab samples when the SPMDs and DGTs were collected. The FSP's used by EPA and DEQ, and OSU's analytical report, are in Appendix A.

E & E collected groundwater samples at upland site monitoring wells for semiannual reporting requirements simultaneously with the September 2002 sampling. Table 1 lists the monitoring wells sampled in September 2002.

2.2 Sample Location Selection

Sampling sites were selected based on the location of the proposed sediment cap and on the locations of previously identified seeps immediately adjacent to the site at the former waste disposal area (FWDA), near the creosote dock, and in Willamette Cove (see Figure 2a). All sampling sites were located geographically using a Global Positioning System (Table 2). Figures 2b, 2c, and 2d correspond to

magnified views of creosote dock, FWDA, and Willamette Cove sections of Figure 2a.

2.2.1 Sample Collection Methods – EPA, Region 10, and DEQ

The EPA, Region 10, shore team collected pore water samples along the shoreline/mudflats area using an (MHE) push-point sampling tool. The MHE push-point sampling tool was pushed into the subsurface, the screen was exposed, and a peristaltic pump then was used to bring the pore water sample to the surface and directly into the sample container. The shore team also collected a single sediment sample. The EPA, Region 10, dive team collected co-located surface water grab, pore water, and sediment samples. The pore water (or subtidal seepage) samples were collected using an MHE sampling tool.

For the EPA, Region 10, dive and shore teams, quality control (QC) samples, including one duplicate, one matrix spike duplicate (MSD) with additional volume, and one blank sample, were collected per sampling day for each team.

DEQ collected pore water samples from locations near the FWDA, the creosote dock, and Willamette Cove using flux chamber methods. The cut-off top of a 55-gallon drum was pushed into the sediment, allowing no residual air inside. A 1-liter collection bag with a known water volume was connected to the seepage drum for a known time period, then removed.

DEQ collected groundwater samples near the same areas where pore water samples were collected, using nested mini-piezometers installed to depths of approximately 14 inches, 36 inches, and 72 inches below ground surface (BGS).

The field sampling plan for EPA and DEQ sampling is presented in Appendix A.

2.2.2 Sample Collection Methods – OSU

OSU deployed SPMDs, also called *passive sampling devices*, for in situ monitoring of aquatic bioavailable PAHs and PCP at McCormick & Baxter on September 12, 2002. The SPMDs sample only organic chemicals in solution (dissolved), excluding those sorbed on organic matter or particulates. DGTs also were deployed on September 12, 2002, and used for quantitative determination of in situ labile metals in solution. DGTs were attached to the SPMD cages. All cages were deployed 1 foot from the riverbed. Four of the samplers (SPMD-7, SPMD-11, SPMD-13, and SPMD-15) were attached to permanent structures.

SPMDs and DGTs were retrieved on September 26, 2002. SPMD-13 was lost. All SPMD samples were placed in prelabeled amber jars and stored in a cooler with ice packs. The DGTs were collected in prelabeled Ziplock bags and stored in a cooler with ice packs. Once samples were returned to the laboratory, they were stored at -20° Celsius (C) until analysis.

Surface water samples were grabbed on September 26, 2002, from the same locations as those of the SPMD and DGT deployments. All grab samples were collected from 1 foot above the riverbed. Water samples were collected in 250-milliliter high-density polyethylene bottles and preserved on ice at 4°C.

OSU collected and analyzed trip blanks, duplicates, laboratory blanks, and fortified samples for DGT and SPMD sampling.

2.2.3 Semiannual Groundwater Sample Collection Methods

As part of the semiannual monitoring performed at the site, groundwater samples are collected from select monitoring wells. Groundwater samples were collected from 14 monitoring wells to coincide with the surface water, sediment, and pore water sampling performed downgradient of the tank farm area (TFA) and FWDA, and in Willamette Cove. Groundwater samples were collected from 13 of the 14 wells using submersible pumps (Grundfos Redi-Flow 2) with disposable, clear, flexible polyvinyl chloride tubing. Groundwater was collected from monitoring well MW-Os using a dedicated hand bailer because the well is not plumb, and is constructed with collars at the well joints that inhibit the Grundfos pump from being lowered to the well screen. Quality assurance (QA)/QC samples, including a rinsate sample, a blind field duplicate sample, and a matrix spike/MSD sample, were submitted to North Creek Analytical, Inc., (NCA), of Portland, for analysis of target metals and semivolatile organic compounds (SVOCs). One duplicate sample was collected from well MW-5 during the sampling event.

2.3 Laboratory Analysis

All surface water, pore water, and sediment samples collected by EPA were analyzed for PAHs and PCP. Samples collected by the EPA, Region 10, shore and dive teams were analyzed by the EPA, Region 10, Manchester Environmental Laboratory, located in Port Orchard, Washington. Samples for all media types were analyzed for PAHs by EPA Method 8270 with selective ion monitoring (SIM). Samples also were analyzed for PCP by EPA Method 8041 and for mercury by EPA Method 1631B. Surface water samples were analyzed for total suspended solids (TSS) (Appendix F). EPA, Region 10, laboratory QA memoranda are in Appendix B at the beginning of each laboratory data packet.

All pore water (flux chamber) and groundwater (MHE) samples collected by DEQ and surface water grab samples collected for DEQ by OSU were analyzed for PAHs by EPA Method 8270-SIM at NCA. Some pore water and surface water grab samples also were analyzed for SVOCs by EPA Method 8270C, diesel range and heavy oil range total petroleum hydrocarbons (NWTPH), and tentatively identified compounds (TICs). Surface water grab samples collected for DEQ by OSU also were analyzed for arsenic, chromium, copper, and zinc by EPA 6000/7000 Series Methods for total metals. An E & E QA memorandum for laboratory analyses is in Appendix B at the beginning of the NCA laboratory data packets.

SPMD samples collected by OSU were analyzed for PAHs, PCP, trivalent arsenic (As^{+3}), chromium, copper, and zinc at the OSU laboratory. Surface water grab samples were analyzed only for As^{+3}, chromium, copper, and zinc at the OSU laboratory. Laboratory QC is discussed in OSU's analytical report (pp. 11-12) in Appendix A.

3 Summary of Results

This section presents the results of the September 2002 sampling event. Sample results are presented by media type. In addition, the semiannual data collection at the McCormick & Baxter site, including NAPL monitoring and extraction, is summarized.

The following list summarizes the media types and sample names for the samples collected by each group participating in the September 2002 sampling event:

- The EPA, Region 10, shore team collected seven pore water samples (Beach B-1 [EPA-SH-1], EPA [SH] 2, EPA [SH] 3, EPA [SH] 4, EPA [SH] 5, EPA [SH] 7, and EPA [SH] 8) and one sediment sample (EPA [SH] 6);

- The EPA, Region 10, dive team collected nine sediment samples (SED-1 through SED-9), nine surface water samples (SED-1 through SED-9), and four pore water samples (SED-3, SED-4, SED-5, and SED-7). Samples for all media types were co-located;

- DEQ collected six pore water samples (CreoDock N. Drum, CreoDock North Flux, CreoDock S. Drum, FWDA-Flux, WC1-Flux, and WC-Blue-Flux) and nine groundwater samples (ODEQ[SH-1] through ODEQ[SH-9]). OSU collected six filtered and unfiltered surface water grab samples (SPMD-1, SPMD-2, SPMD-5, SPMD-11, SPMD-15, and SPMD-20) for DEQ. The surface water samples were collected from the same locations as those of the OSU samples; and

- OSU collected 19 SPMD samples (SPMD-1 through SPMD-12 and SPMD-14 through SPMD-20; SPMD-13 was lost), 20 surface water grab samples (SPMD-1 through SPMD-20), and 20 DGT samples (SPMD-1 through SPMD-20). All sample types were co-located at the 20 collection points.

The contaminants of concern (COCs), identified in the EPA, Region 10, Record of Decision (1996) for McCormick & Baxter, are listed in Table 3. Tables within the report list only COCs. Tables of the complete analytical data are presented in Appendix F.

3.1 Surface Water

Two types of surface water samples were collected: grab and SPMD. The collection times represented by the grab samples in comparison to those of the SPMD samples are quite different, as described in Section 2. The analyses for these different groups of surface water samples are addressed separately. COC analytical results for surface water are presented in Table 4. Results for all analyzed constituents in surface water are presented in Appendix F.

3.1.1 Surface Water Grab Samples

Forty-one surface water grab samples (EPA samples SED-1 through SED-9; DEQ filtered and unfiltered samples SPMD-1, SPMD-2, SPMD-5, SPMD-11, SPMD-15, and SPMD-20; and OSU samples SPMD-1 through SPMD-20) were collected at the site. All samples were analyzed for PAHs and PCP, except the OSU surface water grab samples. A map of concentrations of acenaphthene, phenanthrene, and total PAHs for surface water grab samples is presented in Figure 3a. The following PAHs (included in the list of COCs) were detected in the grab samples: acenaphthene, benzo(a)anthracene, chrysene, fluoranthene, phenanthrene, and pyrene. Detections of total PAHs (COCs) for grab samples ranged from 0.0041microgram per liter (µg/L) at SED-5 to 61.5µg/L at SED-6 (see Table 4). Grab sample SED-6 was collected offshore and slightly upstream of the NAPL seep identified near the FWDA (see Figure 3a). The most commonly detected PAH (COC) was fluoranthene, with concentrations ranging from 0.0041 µg/L at SED-5 to 0.032 µg/L at SED-3. The PAH (COC) with the highest concentration was phenanthrene at 22.7 µg/L (SED-6).

PCP was detected in five of the 21 surface water grab samples analyzed for PCP. Detections of PCP ranged from 0.025 µg/L in SED-8 to 0.079 µg/L in SED-3. Detection limits for PCP in samples from SED-1 through SED-9 averaged 0.019 µg/L. Detection limits for DEQ SPMD grab samples averaged 0.244 µg/L.

DEQ filtered and unfiltered samples also were analyzed for arsenic, chromium, copper, and zinc. Grab samples were filtered for direct comparison to SPMD samples. Chromium, copper, and zinc were detected in the unfiltered grab samples collected by DEQ. Copper was detected in the filtered DEQ grab samples, with concentrations ranging from 0.00141 µg/L to 0.00257 µg/L. SPMD-5 was the only sample with a detection of arsenic (0.00121 µg/L). Detection limits for arsenic were generally 0.001 µg/L.

The OSU samples were analyzed only for As^{+3}, chromium, copper, and zinc. Neither As^{+3} nor zinc was detected in any of the OSU surface water grab samples (see Table 4). The detection limit for As^{+3} and zinc was 0.005 µg/L. Chromium was detected in 15 of the 20 grab samples. Detections of chromium ranged from 0.01 µg/L to 0.04 µg/L. Detection limits for chromium were 0.01 µg/L. Copper was detected in all of the SPMD surface water grab samples, with concentrations rang-

ing from 0.95 µg/L to 1.70 µg/L. The highest detection for copper was in sample SPMD-3, one of three sample locations upstream of the site.

3.1.2 SPMD Surface Water Samples

Nineteen surface water SPMD samples (SPMD-1 through SPMD-12 and SPMD-14 through SPMD-20) were collected at the site. All SPMD samples were analyzed for PAHs and PCP. A map of concentrations of acenaphthene, phenanthrene, and total PAHs for SPMD surface water samples is presented in Figure 3b. The DGT samples (SPMD-1 through SPMD-20) associated with the SPMDs were analyzed for As^{+3}, chromium, copper, and zinc. Analytical results for all surface water samples are presented in Table 4. PAHs were detected in all SPMD surface water samples. Total PAHs (COCs) ranged from 0.1652 µg/L at SPMD-3 to 1.37 µg/L at SPMD-15. Sample SPMD-15, the sample with the highest concentration of total PAHs, was collected at the NAPL seep in Willamette Cove. The lowest detection was from sample SPMD-3, located upstream of the site. Results for analyses of SPMD samples for PCP indicated that all were below detection limits.

Neither As^{+3} nor zinc was detected in any of the SPMD surface water samples (see Table 4). The detection limit for As^{+3} and zinc was 0.002 µg/L. Chromium was detected in nine of the 19 SPMD samples. Detections of chromium ranged from 0.26 µg/L at SPMD-14 to 0.54µg/L at SPMD-11. Detection limits for chromium were 0.2 µg/L. Copper was detected in three of the 19 SPMD grab samples, with concentrations ranging from 0.01 µg/L to 0.03 µg/L. The highest detection for copper was in SPMD-4, within the sediment cap area on the upstream end of the site.

3.2 Pore Water

Eighteen pore water samples were collected from offshore and onshore locations (SED-3, SED-4, SED-5, SED-7, Beach B-1 [EPA-SH-1], EPA [SH] 2 through EPA [SH] 8, CreoDock N. Drum, CreoDock North-Flux, CreoDock S. Drum, FWDA-Flux, WC1-Flux, and WC-Blue-Flux). In addition, three shallow groundwater samples (ODEQ (SH-3), ODEQ (SH-6), and ODEQ (SH-9)) can also be considered as pore water. All samples were analyzed for PAHs. EPA, Region 10, dive team and onshore team samples also were analyzed for PCP. Analytical results for COCs in pore water samples are presented in Table 5. Results for all analyzed constituents in pore water are presented in Appendix F. A map of concentrations of acenaphthene, phenanthrene, and total PAHs for pore water is presented in Figure 4. Total PAH (COC) concentrations ranged from 0.151 µg/L to 513,929 µg/L (see Table 5). The highest total PAH detection was from pore water sample EPA (SH) 8, located adjacent to, in the upstream direction, the NAPL seep near the creosote dock. The PAH (COC) acenaphthene showed the highest concentrations in 14 of the 21 pore water samples. Naphthalene had the highest concentration of the PAHs analyzed for sample EPA (SH) 8, at 421,000 µg/L. DEQ flux chamber measurements are presented in Table 6, which includes volumes and rates.

PCP was detected only in samples EPA (SH) 7 and EPA (SH) 8, at 0.36 µg/L and 2.5 µg/L, respectively (see Table 5). Depending on the laboratory dilution factor, detection limits for PCP ranged from 0.019 µg/L to 0.021 µg/L.

3.3 Sediment

Ten sediment samples (SED-1 through SED-9, and EPA [SH] 6) and one QC sample (SED-51[5A]) were collected at the site. All samples were analyzed for PAHs and PCP. Analytical results for sediment samples are presented in Table 7. Results for all analyzed constituents in sediment are presented in Appendix F. PAHs were detected in all sediment samples. Total PAH (COC) concentrations ranged from 305 micrograms per kilogram (µg/kg) at SED-2 to 303,264 µg/kg at SED-1. A map of concentrations of acenaphthene, phenanthrene, and total PAHs for sediment is presented in Figure 5. Sample SED-1, with the highest total PAH concentration, was collected at the northeast edge of the proposed sediment cap in Willamette Cove. Sample SED-1 also contained the highest concentration of carcinogenic PAHs (CPAHs) (COCs) (see Figure 6). The individual PAHs (COCs) with the highest concentrations varied from sample to sample. The highest individual PAH (COC) concentration was for naphthalene in sediment sample SED-3, collected from the Willamette Cove seep. Phenanthrene had the highest concentration of all the PAHs (COCs) for samples SED-1, SED-5, SED-7, and EPA (SH) 6. The highest PAH (COC) concentration for samples SED-2, SED-4, and SED-9 was of fluoranthene.

PCP was detected in all but one of the sediment samples. Analytical results for SED-2, collected from the northwest edge of the proposed sediment cap, indicated no concentration of PCP above the detection limit of 1.6 µg/kg. The highest concentration of PCP was detected in SED-7. Sample SED-7 was collected from an identified hotspot offshore and in the Willamette riverbed slightly south of the FWDA.

Co-Located Sediment, Pore Water, and Surface Water Samples

The EPA, Region 10, dive team collected co-located sediment, pore water, and surface water samples from four locations (SED-3 through SED-5, and SED-7). Histograms showing total PAH (COC) concentrations in each medium for each location are presented in Figures 7a through 7d. The plots show significantly higher concentrations of total PAHs in sediment samples compared to concentrations in pore water and surface water samples from the same locations. Total PAH concentrations in pore water were higher than the concentrations in surface water for all locations.

3.4 Groundwater

Nine groundwater samples were collected for analyses during the September sampling event (ODEQ[SH-1] through ODEQ[SH-9]). Groundwater samples ODEQ(SH-1) through ODEQ(SH-3), collected near the creosote dock, were from 3.7 feet, 1.95 feet, and 0.95 foot BGS. Groundwater samples ODEQ(SH-4)

through ODEQ(SH-6), collected near the FWDA, were from 4.29 feet, 1.5 feet, and 0.85 foot BGS. Groundwater samples ODEQ(SH-7) through ODEQ(SH-9), collected onshore in Willamette Cove, were from 5.5 feet , 2.5 feet, and 1 foot BGS. Manometer readings were collected to examine vertical gradients (Table 8). All groundwater samples were analyzed for PAHs and PCP. Analytical results for groundwater samples are presented in Table 9. Results for all analyzed constituents in groundwater are presented in Appendix F. Concentrations of acenaphthene, phenanthrene, and total PAHs are mapped in Figure 8. PAHs were detected in all samples, with naphthalene, acenaphthene, and phenanthrene exhibiting the highest concentrations of the COCs. Total PAH (COCs) concentrations ranged from 1.57µg/L to 97,797µg/L for groundwater samples.

Figures 9a through 9d present concentrations of anthracene, naphthalene, phenanthrene, and total PAHs (COCs) with corresponding sample depths. Concentrations of the plotted PAHs increase with depth, with one exception. Naphthalene from 2.5 feet BGS, from the Willamette Cove samples, exhibited the lowest concentration (see Figure 9b).

PCP was detected in three (ODEQ[SH-1] to ODEQ[SH-3]) of the nine groundwater samples. PCP concentrations ranged from 0.021µg/L to 1.1µg/L.

3.4.1 Semiannual Groundwater Monitoring

E & E sampled select site groundwater monitoring wells from September 23 to 26, 2002, to coincide with the surface water, sediment, pore water, and groundwater sampling performed in front of the site and in Willamette Cove. Semiannual groundwater monitoring at the site included groundwater level measurements and sampling at select wells. Groundwater level measurements were recorded monthly at site wells that historically have not contained NAPL. The objective of semiannual groundwater sampling is to determine whether select perimeter monitoring wells have exceeded the alternative cleanup levels (ACLs) for the site.

Groundwater Elevation Measurements

Groundwater levels were measured manually and were recorded at approximately 24 wells located throughout the site. Based on previous automated transducer data, daily groundwater fluctuations of several feet are common in some of the monitoring wells, mainly because of river stage elevation changes, tidal influences, precipitation, and barometric pressure. Figures 10 and 11 present shallow groundwater contour maps for September 2002 and December 2002, respectively. The contours indicate that the general movement of shallow groundwater is from the site toward the Willamette River and Willamette Cove. Previous data showed localized shallow groundwater gradient reversals along the riverfront during high river stage. However, these reversed groundwater gradients were not observed during 2002. Figure 12 charts the average daily river elevation data obtained from the United States Geological Survey at the Morrison Bridge station. The data are corrected for National Geodetic Vertical Datum (NGVD) in front of the McCormick & Baxter site, and cover the period from March 1996 through December

2002. The figure shows the tail end of the 1996 flood event in Portland and the high river stage during the unusually wet spring in 1998. The river data indicate that the river has not exceeded the ordinary high water line since June 1996. The maximum river stage recorded during the reporting period was 7.96 feet NGVD on July 1, 2002.

Horizontal groundwater gradients calculated for the reporting period are presented in Table 10. These gradients were generally toward the river, were 0.010 foot per foot (ft/ft) to 0.008 ft/ft in the TFA, and ranged from 0.009 ft/ft to 0.001 ft/ft in the FWDA. These gradients are somewhat steeper than typical, but are within ranges previously measured across the site during similar times of year.

Groundwater Sampling Activities

To evaluate the extent of groundwater contamination in the shallow, intermediate, and deep groundwater zones at the site, groundwater samples were collected from 14 monitoring wells (MW-Ks, -LRs, -Os, -2s, -3s, -4s, -5s, -8i, -13i, -18s, -23d, -25s, -31s, and -35s) from September 23 to 26, 2002 (see Table 11). Well identifications are labeled to indicate the depth of the well: *s* for shallow wells, *i* for intermediate wells, and *d* for deep wells. Figure 13 depicts the locations of the monitoring wells sampled during September 2002. On September 27, 2002, the samples were submitted to NCA for chemical analysis, including SVOCs and target metals. SVOCs, including PCP and PAHs, were analyzed by EPA Method 8270-SIM. Target metals, including arsenic, chromium, copper, and zinc, were analyzed by EPA Method 6000/7000 Series. In addition, groundwater samples collected from MW-31s and MW-LRs were analyzed for dioxin/furan compounds by EPA Method 1613. The dioxin/furan analysis was subcontracted by NCA to Pace Analytical of Minneapolis, Minnesota.

Semiannual Groundwater Sampling Results

Analytical results for this semiannual sampling event were compared to the ACLs, which are listed in the EPA, Region 10, Record of Decision and presented in Table 11. The table also presents analytical results for:

- Total CPAHs, including benzo(a)anthracene, benzo(a)pyrene (B-a-P), benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene;

- Light-molecular-weight PAHs (LPAHs), including acenaphthene, acenaphthalene, anthracene, fluorene, naphthalene, and phenanthrene; and

- High-molecular-weight PAHs (HPAHs), including benzo(a)anthracene, B-a-P, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, pyrene, and indeno(1,2,3-cd)pyrene.

In addition, analytical results for polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran are presented in Table 11, using the 2,3,7,8-

tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalency quotient (TEQ) concentration provided by Pace Analytical.

Target analyte metals exceeded the respective ACLs in one of the groundwater samples from the 14 wells sampled. The ACL for zinc (1 milligram per liter [mg/L]) was exceeded in groundwater sampled from MW-Os at 2.16 mg/L, which is consistent with the result from the previous reporting period. No other target metals analytical results for samples obtained from the wells sampled during the reporting period exceeded the respective ACLs.

PCP and total PAH analytical results did not exceed the respective ACLs, 5,000 µg/L for PCP and 43,000 µg/L for total PAHs, in any of the wells sampled. PCP was detected in three of the 14 wells sampled, at 233 µg/L (MW-8i), 114 µg/L (MW-LRs), and 205 µg/L (MW-18s). The wells with PCP detections are identical to the wells with PCP detections during the previous reporting period, with similar detection values. Detected total PAH results ranged from 0.11 µg/L (MW-3s) to 9,090 µg/L (MW-8i). ACLs have not been established for CPAHs, LPAHs, or HPAHs. Dioxin/furan compounds were detected in the groundwater samples from MW-LRs and MW-31s. Detected concentrations of 2,3,7,8-TCDD TEQ, 3.5 x 10^{-7} µg/L (MW-LRs) and 2.1 x 10^{-7} µg/L (MW-31s), did not exceed the ACL of 2.0 x 10^{-4} µg/L.

The relative percent differences (RPDs) between PCP and PAH analyte concentrations in the groundwater sample from MW-5s and its field duplicate, labeled *MW-15-092602*, were within QC limits (less than 25% RPD). The RPDs between arsenic and zinc concentrations exceeded the QC limits. The concentrations were either nondetect or at trace levels (i.e., sample concentrations were less than five times the reporting limit); therefore, no problems in data quality were noted.

3.5 NAPL Gauging and Extraction

This section presents a summary of NAPL extraction operations that are performed routinely at the site. These operations include measurement of lighter-than-water nonaqueous phase liquid (LNAPL) and denser-than-water nonaqueous phase liquid (DNAPL) thickness, and manual extraction of NAPL. NAPL thickness is measured to document the location and quantity of mobile NAPL in order to determine site trends and to predict mobile NAPL locations during seasonal groundwater fluctuations. The intent of NAPL extraction is to maximize the quantity of mobile NAPL extracted and to minimize the quantity of water removed from the subsurface. The monitoring and extraction activities at the site were performed from July 1 through December 31, 2002.

3.5.1 Nonaqueous Phase Liquid Measurements

Monitoring wells in the TFA and FWDA are measured for NAPL thickness twice monthly. LNAPL and DNAPL measurements are recorded from select monitor-

ing and extraction wells located throughout the site. Tables 1 and 12 present monthly, historical, and maximum LNAPL and DNAPL thickness, respectively.

LNAPL did not exceed the historical maximum thickness measurements at any well during this reporting period (Table 1). The measured LNAPL thickness for this period ranged from 0.01 foot in several wells to 6.3 feet in EW-15s in July 2002. Ten wells in the FWDA, four wells in the TFA, and MW-1 exhibited LNAPL during this reporting period.

DNAPL was not detected in any of the site wells during this reporting period. DNAPL may have migrated below the intake screens of the site wells, or may have pooled in areas without monitoring or extraction wells. E & E measured MW-23d, a deep well located in the TFA, in September 2002. No evidence of NAPL was observed in MW-23d.

Table 13 presents NAPL well classifications from July 1997 through the current reporting period (June 2002). Wells are classified by presence of LNAPL, DNAPL, both, or neither. Figure 14 maps the NAPL well locations and classifications, as shown in Table 13, for the current reporting period.

Two TFA wells (EW-1s and EW-24s) that previously did not contain LNAPL contained LNAPL during this reporting period. EW-24s, which previously contained only DNAPL, contained only LNAPL during this reporting period. No other TFA wells changed classifications during this reporting period.

FWDA well MW-Gs changed classification from LNAPL and DNAPL during the previous reporting period to only LNAPL during this reporting period. Well MW-20i, which previously did not contain NAPL, briefly contained LNAPL during this reporting period. No other FWDA wells changed classifications during this reporting period.

3.5.2 Nonaqueous Phase Liquid Extraction

NAPL extraction activities performed during this reporting period included manual and passive skimmer extraction. NAPL extraction quantities for TFA and FWDA wells during the reporting period are summarized in Table 14.

Pure-Phase and Manual Nonaqueous Phase Liquid Extraction

Manual NAPL extraction was conducted throughout this reporting period. The extraction process involved measurement of LNAPL and DNAPL in select wells for the presence of pure-phase product, and removal of the pure-phase product using hand bailers. The removed product was transported to the sludge tank in the TFA shop building. Pure-phase NAPL extraction is conducted periodically based on measured NAPL thickness. During the reporting period, approximately 6.08 gallons of NAPL was extracted manually from the TFA wells and approximately 44.25 gallons of NAPL was extracted manually from the FWDA wells. Total NAPL recovered by manual extraction was approximately 50.33 gallons, which is

a significant increase from the previous reporting period by 9.53 gallons. This increase can be attributed to more frequent extraction attempts. Table 14 identifies well locations and summarizes the quantity of NAPL extracted manually during this period.

Passive Skimmer LNAPL Removal

Passive LNAPL skimmers are utilized to collect NAPL with minimal effort. The devices are emptied periodically depending on the NAPL production characteristics of the specific wells. Five passive LNAPL skimmers were in operation at the site during the reporting period and were deployed at EW-10s, EW-15s, EW-23s, MW-21s, and MW-Rs.

The passive skimmer locations and quantities of collected LNAPL are presented in Table 14. Approximately 7.13 gallons of LNAPL was recovered from the passive LNAPL skimmers during the reporting period, which is a significant increase of 5.98 gallons from the previous period. Approximately 0.19 gallon of LNAPL was collected from wells in the TFA, and approximately 6.94 gallons were collected from wells in the FWDA. This increase is attributable to the deployment of two new skimmers and the replacement of oil wicks in the existing steel skimmers.

Continuous Nonaqueous Phase Liquid Extraction

The FWDA and TFA continuous NAPL extraction systems are shut down and have not been operating since fall 2000. NAPL was not extracted by these systems during this reporting period.

Willamette Cove NAPL Seeps

NAPL seeps were observed in Willamette Cove during this reporting period. River water fell to very low levels in August 2002. Figure 12 represents corrected river elevation data in front of the McCormick & Baxter site. Sheen and NAPL blebs were observed almost immediately following decreasing river stage as hydrostatic pressures decreased, allowing NAPL discharge. West Coast Marine deployed DEQ's NAPL containment boom on August 23, 2002. The NAPL-sorbent boom absorbed much of the free product, and was changed out frequently. Approximately 5 cubic yards of sorbent boom was used during the reporting period. After river stage rose during December 2002, the seeps became inactive, and the containment booms were removed.

In response to concerns regarding public exposure to the NAPL seeps, a fence, with a swinging gate, was installed in Willamette Cove in October 2002, from the railroad embankment to an offshore piling. The fence is 6-foot-high chain link, topped with three-strand barbed wire. The fence extends into the water past waist height during low river stage. Signs were placed near the fence gate, on the attached piling, and on other pilings to provide hazard warning from all approaches.

4 Summary

EPA, Region 10; DEQ; and OSU participated in a cooperative sampling event that took place between September 5 and 26, 2002, at the McCormick & Baxter site. Surface water, pore water, groundwater, and sediment samples were collected from 46 locations onshore and offshore of the site. Laboratory analyses were completed for PAHs, PCP, SVOCs, arsenic, chromium, copper, and zinc. Additional analyses included mercury, total suspended solids, dissolved organic carbon, and total organic carbon (Appendix F). The most commonly detected PAHs (of the COCs) were acenaphthene, fluoranthene, naphthalene, and phenanthrene. The highest concentrations of PAHs were detected in sediment samples. The lowest concentrations of PAHs were detected in surface water samples. The highest concentrations of PAHs also were associated with identified NAPL seeps and hotspots with the exception of SED-1. SED-1 located at the downstream edge of the sediment cap, showed relatively high concentrations of total PAH (COCs) for sediment and pore water. Some surface water samples also were analyzed for the priority pollutant metals arsenic, chromium, copper, and zinc. Arsenic was detected at a low concentration (0.00121 µg/L) in one of 32 surface water grab samples. Detections of chromium ranged from 0.01 µg/L to 0.54 µg/L for all grab samples. Detections of copper ranged from 0.01 µg/L to 1.7 µg/L for all grab samples. Zinc was not detected in any samples.

Table 1

HISTORICAL AND MONTHLY LNAPL THICKNESS
July 1 through December 31, 2002
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

Well ID	Maximum LNAPL Thickness (ft)	Maximum LNAPL Date	July 2002 LNAPL Thickness (ft)	August 2002 LNAPL Thickness (ft)	September 2002 LNAPL Thickness (ft)	October 2002 LNAPL Thickness (ft)	November 2002 LNAPL Thickness (ft)	December 2002 LNAPL Thickness (ft)
Tank Farm Area								
EW-1s	1.3	unknown	0.00	0.00	0.02	0.02	0.07	0.00
EW-4s	1.5	Sep-92	0.00	nm	0.00	nm	0.00	nm
EW-5s	0.9	Sep-94	0.00	nm	0.00	nm	0.00	nm
EW-7s	1.4	Sep-92	0.00	nm	0.00	nm	0.00	nm
EW-8s	0.02	Apr-99	0.00	nm	0.00	nm	0.00	nm
EW-12s	0.30	Nov-97	0.00	nm	0.00	nm	0.00	nm
EW-17s	3.06	May-01	0.00	0.00	0.00	0.00	0.00	0.00
EW-18s	4.43	Jul-94	0.48	0.26	0.85	1.03	0.68	0.78
EW-24s	4.45	Nov-01	0.00	0.00	0.00	0.18	0.35	0.69
EW-25s	trace	Mar-00	0.00	nm	0.00	nm	0.00	nm
MW-Is	2.82	Mar-96	0.00	0.00	0.00	0.01	0.00	0.00
MW-LRs	nd	-	nm	nm	nm	nm	nm	nm
MW-Ps	nd	-	nm	nm	nm	nm	nm	nm
MW-Rs	3.1	Mar-96	0.00	0.00	0.00	1.25	1.28	0.96
MW-7s	2.76	Sep-92	nm	nm	nm	nm	nm	nm
MW-8i	nd	-	0.00	0.00	0.00	nm	nm	nm
MW-10s	8.08	Feb-93	0.00	0.04	0.15	0.00	0.30	0.02
MW-22i	0.01	Jul-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-23d	nd	-	0.00	0.00	0.00	nm	nm	nm
MW-29	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-1s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-3s	-	-	nm	nm	nm	nm	nm	nm
TM-4s	-	-	nm	nm	nm	nm	nm	nm
TM-5s	0.01	Aug-99	0.00	0.00	0.00	0.00	0.00	0.00
Former Waste Disposal Area								
EW-2s	0.04	Jun-99	0.00	nm	0.00	nm	0.00	nm
EW-3s	1.41	Sep-99	0.21	0.10	0.55	0.77	0.13	0.17
EW-6s	3.5	Aug-94	0.35	0.42	1.01	0.74	0.00	0.04
EW-9s	0.42	Oct-98	0.00	nm	0.00	nm	0.00	nm
EW-10s	7.5	Jul-93	0.79	0.50	0.81	0.09	0.49	0.46
EW-13s	0.03	Jul-99	0.00	0.00	0.00	0.00	0.00	0.00
EW-14s	4.87	Oct-01	0.09	0.00	0.13	0.55	0.00	0.02
EW-15s	11.98	Nov-01	6.30	1.82	4.24	3.96	0.31	0.00
EW-16s	nd	-	0.00	nm	0.00	nm	0.00	nm
EW-19s	0.13	Aug-99	0.00	nm	0.00	nm	0.00	nm
EW-20s	1.11	May-96	0.00	nm	0.00	nm	0.00	nm
EW-22s	0.01	Apr-99	0.00	nm	0.00	nm	0.00	nm
EW-23s	7.67	Jul-00	2.85	1.99	2.33	0.72	0.12	0.16
MW-Ds	5.72	Feb-99	0.00	0.00	0.44	0.31	0.00	0.00
MW-Es	3.44	Nov-01	0.03	0.03	0.00	0.06	0.29	0.10
MW-Fs	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-Gs	2.34	Sep-92	0.00	0.00	0.00	0.00	0.00	0.00
MW-18s	0.14	Sep-94	nm	nm	nm	nm	nm	nm
MW-20i	0.55	Apr-98	0.00	nm	0.11	nm	0.00	nm
MW-21s	10.28	Sep-92	0.00	0.02	0.67	3.07	0.91	2.98
MW-34i	nd	-	0.00	nm	0.00	nm	0.00	nm
Other Areas								
EW-11s	0.02	Nov-99	0.00	nm	0.00	nm	0.00	nm
MW-1s [4]	4.04	Jul-00	nm	nm	nm	nm	nm	nm
MW-19s	0.01	Jul-98	0.00	nm	0.00	nm	0.00	nm

Key:
- = Not applicable.
ft = Feet.
ID = Identification.
LNAPL = Lighter-than-water nonaqueous phase liquid.
NAPL = Nonaqueous phase liquid.
nd = Nondetect.
nm = Not measured.

Notes:
1. Measured LNAPL values in reversed highlight indicate a historical maximum LNAPL value recorded during the reporting period.
2. The accuracy of the oil/water interface probe is not reliable at NAPL thicknesses less 0.01 foot. Therefore, trace amounts of NAPL may exist where the measured NAPL v 0.00 foot. When a NAPL sheen has been observed (on the probe tip) in these cases, value is noted as *trace*.
3. The oil/water interface probe was out of service during January 2002 for repairs.
4. MW-1s contains significant black, viscous NAPL. The NAPL is too thick to be read by the guaging tape and probe.

Table 2 Geographical Sample Locations
McCormick & Baxter Creosoting Company
Portland, Oregon

Sample Location	Latitude deg min sec	Longitude deg min sec
EPA dive team samples		
SED-1	45 34.755 N	122 44.833 W
SED-2	45 34.745 N	122 44.857 W
SED-3	45 34.758 N	122 44.714 W
SED-4	45 34.685 N	122 44.650 W
SED-5	45 34.662 N	122 44.700 W
SED-51/5A	45 34.662 N	122 44.700 W
SED-6	45 34.679 N	122 44.626 W
SED-7	45 34.643 N	122 44.650 W
SED-8	45 34.593 N	122 44.407 W
SED-9	45 34.627 N	122 44.614 W
OSU samples		
SPMD-1	*	*
SPMD-2	*	*
SPMD-3	*	*
SPMD-4	45° 34' 35" N	122° 44' 27" W
SPMD-5	45° 34' 36" N	122° 44' 27" W
SPMD-6	45° 34' 36" N	122° 44' 29" W
SPMD-7	45° 34' 33" N	122° 44' 27" W
SPMD-8	45° 34' 36" N	122° 44' 36" W
SPMD-9	45° 34' 37" N	122° 44' 31" W
SPMD-10	45° 34' 37" N	122° 44' 31" W
SPMD-11	45° 34' 38" N	122° 44' 36" W
SPMD-12	45° 34' 40" N	122° 44' 38" W
SPMD-13	45° 34' 33" N	*
SPMD-14	45° 34' 39" N	122° 44' 42" W
SPMD-15	45° 34' 46" N	122° 44' 43" W
SPMD-16	45° 34' 43" N	122° 44' 46" W
SPMD-17	45° 34' 44" N	122° 44' 49" W
SPMD-18	45° 34' 47" N	122° 44' 46" W
SPMD-19	45° 34' 49" N	122° 44' 44" W
SPMD-20	45° 34' 37" N	122° 44' 54" W
DEQ samples		
WCa (Steel Drum)	45° 34' 45.25" N	122° 44' 42.63" W
WCb (Blue Drum)	45° 34' 45.30" N	122° 44' 42.70" W
FWDA	45° 34' 45.25" N	122° 44' 38.64" W
Creosote Dock, South Drum	45° 34' 39.28" N	122° 44' 29.85" W
Creosote Dock, North Drum	45° 34' 39.77" N	122° 44' 31.06" W
WC Seep West	45° 34' 45.16" N	122° 44' 42.61" W
WC Seep East	45° 34' 45.6" N	122° 44' 42.23" W
ODEQ SH 1-3	45.5776483	-122.7415932
ODEQ SH 4-6	45.57810742	-122.7442046
ODEQ SH 7-9	45.57910854	-122.7451862
EPA shoreline team samples		
EPA SH-1	near EPA SH-2	near EPA SH-2
EPA SH-2	45.57819161	-122.7444664
EPA SH-3	45.57810059	-122.7439482
EPA SH-4	45.57811023	-122.7440664
EPA SH-5	45.57813373	-122.7440945
EPA SH-6	next to SH-5	next to SH-5
EPA SH-7	45.57784004	-122.7421554
EPA SH-8	45.57766487	-122.7416181

* Locations pending

Table 3 Contaminants of Concern
McCormick & Baxter Creosoting Company
Portland, Oregon

Contaminants of Concern	
Dioxins/Furan	
Pentachlorophenol	
Arsenic	
Chromium	
Copper	
Zinc	
Polynuclear Aromatic Hydrocarbons (PAHs)	
Acenaphthene	L
Acenaphthylene	L
Anthracene	L
Benzo[a]anthracene	H,C
Benzo[b]fluoranthene	H,C
Benzo[k]fluoranthene	H,C
Benzo[a]pyrene	H,C
Benzo[g,h,i]perylene	H
Chrysene	H,C
Dibenz[a,h]anthracene	H,C
Fluoranthene	H
Fluorene	L
Ideno[1,2,3-cd]pyrene	H,C
Naphthalene	L
Phenanthrene	L
Pyrene	H
Total LPAHs	
Total HPAHs	
Total Carcinogenic PAHs	
Total PAHs	

Table 4 Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

Laboratory		EPA									
						GRAB - UNFILTERED					
CONTAMINANT OF CONCERN		SED-1 (ug/L)	SED-2 (ug/L)	SED-3 (ug/L)	SED-4 (ug/L)	SED-5 (ug/L)	SED-6 (ug/L)	SED-7 (ug/L)	SED-8 (ug/L)	SED-9 (ug/L)	SED-51 (5A) (ug/L)
Date Sampled		9/5/2002	9/5/2002	9/6/2002	9/6/2002	9/5/2002	9/6/2002	9/5/2002	9/5/2002	9/6/2002	9/5/2002
Pentachlorophenol		<0.018	<0.019	0.079	<0.019	<0.018	0.078	0.051	0.025	<0.019	0.025
Arsenic		*	*	*	*	*	*	*	*	*	*
Chromium		*	*	*	*	*	*	*	*	*	*
Copper		*	*	*	*	*	*	*	*	*	*
Zinc		*	*	*	*	*	*	*	*	*	*
Polynuclear Aromatic Hydrocarbons (PAHs)											
Acenaphthene	L	<0.018	<0.019	<0.020	<0.019	<0.018	9.8	<0.019	0.013 J	<0.019	<0.019
Acenaphthylene	L	<0.018	<0.019	<0.020	<0.019	<0.018	0.042	<0.019	<0.019	<0.019	<0.019
Anthracene	L	<0.018	<0.019	<0.020	<0.019	<0.018	3.8	<0.019	<0.019	<0.019	<0.019
Benzo[a]anthracene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	1.5	<0.037	0.0051 J	0.0041	<0.037
Benzo[b]fluoranthene	H, C	<0.018	<0.019	<0.020	<0.019	<0.018	0.77	<0.019	<0.019	<0.019	<0.019
Benzo[k]fluoranthene	H	<0.018	<0.019	<0.020	<0.019	<0.018	0.39	<0.019	<0.019	<0.019	<0.019
Benzo[a]pyrene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	0.44	<0.037	<0.038	<0.037	<0.037
Benzo[g,h,i]perylene	H, C	<0.018	<0.019	<0.020	<0.019	<0.018	0.087	<0.019	<0.019	<0.019	<0.019
Chrysene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	1.2	<0.037	0.0067 J	0.0039	<0.037
Dibenzo[a,h]anthracene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	0.093 J	<0.037	<0.038	<0.037	<0.037
Fluoranthene	H	<0.018	0.0084	0.032	0.0071 J	0.0041	11.9	0.0083 J	0.024 J	0.018	0.0043 J
Fluorene	L	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	0.13	<0.037	<0.038	<0.037	<0.037
Naphthalene	L	<0.018	<0.019	<0.020	<0.019	<0.018	3.3	<0.019	<0.019	<0.019	<0.019
Phenanthrene	L	<0.018	0.0098	0.013	<0.019	<0.018	22.7	<0.019	<0.019	0.0087	<0.019
Pyrene	H	<0.018	<0.019	0.016	<0.019	<0.018	5.3	<0.019	0.013 J	0.011	<0.019
Total LPAHs		MRL	0.0098	0.0130	MRL	MRL	39.6	MRL	0.0130	0.0087	MRL
Total HPAHs		MRL	0.0084	0.0480	0.0071	0.0041	21.8	0.0083	0.0488	0.0370	0.0043
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	4.22	MRL	0.0118	0.0080	MRL
Total PAHs		MRL	0.0182	0.0610	0.0071	0.0041	61.5	0.0083	0.0618	0.0457	0.0043

* Results pending

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

MRL Method Reporting Limit

J reported value is an estimate

Surface water grab samples collected by EPA dive team in September 2002. Samples collected approximately 1 foot off river bottom. Samples analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

Laboratory		NORTH CREEK ANALYTICAL						
		GRAB - UNFILTERED						
CONTAMINANT OF CONCERN		SPMD-1 (ug/L)	SPMD-2 (ug/L)	SPMD-5 (ug/L)	SPMD-11 (ug/L)	SPMD-15 (ug/L)	SPMD-15 (duplicate) (ug/L)	SPMD-20 (ug/L)
Date Sampled		9/12/2002 10:00:00 AM	9/12/2002 10:55:00 AM	9/12/2002 5:10:00 PM	9/12/2002 4:00:00 PM	9/12/2002 3:00:00 PM	9/12/2002 3:00:00 PM	9/12/2002 1:40:00 PM
Pentachlorophenol		<0.236	<0.238	<0.236	<0.239	<0.253	<0.249	<0.240
Arsenic		<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium		<0.00100	<0.00100	<0.00100	0.00101	<0.00100	**0.00300**	<0.00100
Copper		**0.00376**	**0.00207**	**0.00584**	**0.0256**	<0.00200	**0.00951**	**0.00362**
Zinc		**0.00767**	**0.00509**	**0.00602**	**0.0169**	<0.00500	**0.0221**	**0.00710**
Polynuclear Aromatic Hydrocarbons (PAHs)								
Acenaphthene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Acenaphthylene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Anthracene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]anthracene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[b]fluoranthene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[k]fluoranthene	H	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]pyrene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[g,h,i]perylene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Chrysene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Dibenzo[a,h]anthracene	H, C	<0.0472	<0.0476	<0.0472	<0.0478	<0.0506	<0.0498	<0.0481
Fluoranthene	H	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	**0.0313**	<0.0240
Fluorene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Ideno[1,2,3-cd]pyrene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Naphthalene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Phenanthrene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Pyrene	H	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Total LPAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total HPAHs		MRL	MRL	MRL	MRL	MRL	**0.0313**	MRL
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		MRL	MRL	MRL	MRL	MRL	**0.0313**	MRL

-- Not Analyzed

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

MRL Method Reporting Limit

J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

Laboratory		NORTH CREEK ANALYTICAL						
		GRAB - FILTERED						
CONTAMINANT OF CONCERN		SPMD-1 (ug/L)	SPMD-2 (ug/L)	SPMD-5 (ug/L)	SPMD-11 (ug/L)	SPMD-15 (ug/L)	SPMD-15 (duplicate) (ug/L)	SPMD-20 (ug/L)
Date Sampled		9/12/2002 10:00:00 AM	9/12/2002 10:55:00 AM	9/12/2002 5:10:00 PM	9/12/2002 4:00:00 PM	9/12/2002 3:00:00 PM	9/12/2002 3:00:00 PM	9/12/2002 1:40:00 PM
Pentachlorophenol		<0.236	<0.248	<0.240	<0.238	<0.256	<0.270	<0.242
Arsenic		<0.00100	**0.00121**	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium		<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Copper		**0.00257**	**0.00177**	**0.00154**	**0.00217**	**0.00141**	**0.00147**	**0.00191**
Zinc		<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Polynuclear Aromatic Hydrocarbons (PAHs)								
Acenaphthene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Acenaphthylene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Anthracene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]anthracene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[b]fluoranthene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[k]fluoranthene	H	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]pyrene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[g,h,i]perylene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Chrysene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Dibenzo[a,h]anthracene	H, C	<0.0472	<0.0495	<0.0481	<0.0476	<0.0513	<0.0541	<0.0483
Fluoranthene	H	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0595**	<0.0242
Fluorene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Ideno[1,2,3-cd]pyrene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Naphthalene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Phenanthrene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Pyrene	H	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0423**	<0.0242
Total LPAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total HPAHs		MRL	MRL	MRL	MRL	MRL	0.1018	MRL
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		MRL	MRL	MRL	MRL	MRL	0.1018	MRL

-- Not Analyzed
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

Laboratory		OREGON STATE UNIVERSITY																			
		PASSIVE SAMPLING DEVICES																			
CONTAMINANT OF CONCERN		SPMD-1 (ug/L)	SPMD-2 (ug/L)	SPMD-3 (ug/L)	SPMD-4 (ug/L)	SPMD-5 (ug/L)	SPMD-6 (ug/L)	SPMD-7 (ug/L)	SPMD-8 (ug/L)	SPMD-9 (ug/L)	SPMD-10 (ug/L)	SPMD-11 (ug/L)	SPMD-12 (ug/L)	SPMD-13 (ug/L)	SPMD-14 (ug/L)	SPMD-15 (ug/L)	SPMD-16 (ug/L)	SPMD-17 (ug/L)	SPMD-18 (ug/L)	SPMD-19 (ug/L)	SPMD-20 (ug/L)
Date Sampled																					
Pentachlorophenol		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Arsenic		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium		<0.2	0.35	<0.2	<0.2	<0.2	<0.2	0.31	0.37	0.33	<0.2	0.54	<0.2	<0.2	0.26	<0.2	0.28	<0.2	0.28	<0.2	0.29
Copper		<0.005	<0.005	<0.005	0.03	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	<0.005	<0.005	0.01	<0.005
Zinc		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Polynuclear Aromatic Hydrocarbons (PAHs)																					
Acenaphthene	L	0.0155	0.0122	0.0102	0.03334	0.0355	0.0425	0.0055	0.00629	0.0354	0.0496	0.0341	0.0631	*	0.0238	0.0671	0.0313	0.0215	0.011	0.0103	0.0149
Acenaphthylene	L	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	*	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021
Anthracene	L	0.0041	0.00316	0.0028	0.0157	0.0116	0.0137	0.0033	0.0025	0.0224	0.0218	0.0145	0.0216	*	0.0038	0.0351	0.0114	0.0065	0.004	0.0051	0.0053
Benzo[a]anthracene	H,C	--	--	--	--	--	--	--	--	--	--	--	--	*	--	--	--	--	--	--	--
Benzo[b]fluoranthene	H,C	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	*	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015
Benzo[k]fluoranthene	H	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	*	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015
Benzo[a]pyrene	H,C	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	*	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033
Benzo[g,h,i]perylene	H,C	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	*	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149
Chrysene	H,C	--	--	--	--	--	--	--	--	--	--	--	--	*	--	--	--	--	--	--	--
Dibenzo[a,h]anthracene	H,C	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	*	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Fluoranthene	H	0.0361	0.031	0.0237	0.166	0.0937	0.107	0.0287	0.0272	0.199	0.192	0.163	0.196	*	0.0386	0.232	0.0869	0.05	0.035	0.0479	0.445
Fluorene	L	0.143	0.113	0.0952	0.362	0.382	0.447	0.105	0.112	0.382	0.512	0.369	0.638	*	0.274	0.675	0.343	0.253	0.156	0.15	0.192
Ideno[1,2,3-cd]pyrene	H,C	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	*	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152
Naphthalene	L	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	*	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Phenanthrene	L	0.0225	0.0157	0.0124	0.0787	0.0534	0.0642	0.0153	0.013	0.106	0.0993	0.062	0.0971	*	0.029	0.155	0.0445	0.0266	0.018	0.0225	0.0226
Pyrene	H	0.0301	0.0262	0.0209	0.121	0.07	0.0779	0.025	0.0244	0.132	0.154	0.131	0.146	*	0.033	0.21	0.0708	0.045	0.0314	0.0386	0.0440
Total LPAHs		0.1851	0.1441	0.1206	0.4897	0.4825	0.5674	0.1291	0.1338	0.5458	0.6827	0.4796	0.8198	*	0.3306	0.9322	0.4302	0.3076	0.1890	0.1879	0.2348
Total HPAHs		0.0662	0.0572	0.0446	0.2870	0.1637	0.1849	0.0537	0.0516	0.3310	0.3460	0.2940	0.3420	*	0.0716	0.4420	0.1577	0.0950	0.0664	0.0865	0.4890
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	*	MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		0.2513	0.2013	0.1652	0.7767	0.6462	0.7523	0.1828	0.1854	0.8768	1.03	0.7736	1.16	*	0.4022	1.37	0.5879	0.4026	0.2554	0.2744	0.7238

– Not Analyzed

* Sampler missing upon retrieval

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

MRL Method Reporting Limit

Surface water samples collected by OSU using passive sampling devices (SPMD). Samplers were deployed on September 12, 2000 and collected on September 26, 2002. Samplers were placed approximately 1 foot off the river bottom. Samples were analyzed at the OSU laboratory. Laboratory results are presented in the OSU Analytical Report in Appendix A.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

Laboratory		OREGON STATE UNIVERSITY																		
		GRAB - UNFILTERED																		
CONTAMINANT OF CONCERN		SPMD-1 (ug/L)	SPMD-2 (ug/L)	SPMD-3 (ug/L)	SPMD-4 (ug/L)	SPMD-5 (ug/L)	SPMD-6 (ug/L)	SPMD-7 (ug/L)	SPMD-8 (ug/L)	SPMD-9 (ug/L)	SPMD-10 (ug/L)	SPMD-11 (ug/L)	SPMD-12 (ug/L)	SPMD-13 (ug/L)	SPMD-14 (ug/L)	SPMD-15 (ug/L)	SPMD-16 (ug/L)	SPMD-17 (ug/L)	SPMD-18 (ug/L)	SPMD-19 (ug/L)	SPMD-20 (ug/L)
Date Sampled																				
Pentachlorophenol																				
Arsenic		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium		<0.01	**0.01**	**0.02**	<0.01	**0.01**	**0.02**	**0.03**	<0.01	**0.01**	**0.03**	**0.04**	**0.02**	**0.02**	**0.01**	**0.04**	**0.02**	**0.01**	**0.01**	<0.01	<0.01
Copper		**0.98**	**1.25**	**1.70**	**1.45**	**1.16**	**1.00**	**1.15**	**1.10**	**1.29**	**1.22**	**1.50**	**1.40**	**1.41**	**0.95**	**1.36**	**1.31**	**1.21**	**1.46**	**1.27**	**1.18**
Zinc		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Polynuclear Aromatic Hydrocarbons (PAHs)																				
Acenaphthene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[a]anthracene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo[a,h]anthracene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total LPAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total HPAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Carcinogenic PAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

-- Not Analyzed
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH

Surface grab water samples were collected by OSU on September 26, 2002. Samples were collected from approximately 1 foot off river bottom. Samples were analyzed at the OSU laboratory. Laboratory results are presented in the OSU Analytical Report in Appendix A.

Table 5 Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

CONTAMINANT OF CONCERN		SED-3 (ug/L)	SED-4 (ug/L)	SED-5 (ug/L)	SED-7 (ug/L)	SED-51 (5A) (ug/L)	Beach B-1 (EPA-SH-1) (ug/L)	EPA (SH) 2 (ug/L)	EPA (SH) 3 (ug/L)	EPA (SH) 4 (ug/L)	EPA (SH) 5 (ug/L)
Date Sampled		**9/6/2002**	**9/6/2002**	**9/5/2002**	**9/5/2002**	**9/5/2002**	**9/10/2002**	**9/10/2002**	**9/10/2002**	**9/10/2002**	**9/10/2002**
Pentachlorophenol		<0.019	<0.019	<0.019	<0.020	<0.019	<0.020	<0.020	<0.021	<0.021	<0.020
Arsenic		*	*	*	*	*	*	*	*	*	*
Chromium		*	*	*	*	*	*	*	*	*	*
Copper		*	*	*	*	*	*	*	*	*	*
Zinc		*	*	*	*	*	*	*	*	*	*
Polynuclear Aromatic Hydrocarbons (PAHs)											
Acenaphthene	L	**104**	**6.6**	**25.4**	**8.5**	**65.5**	<0.020	**19.3**	**0.048**	**3.4**	**9.5**
Acenaphthylene	L	**0.24**	<0.019	**0.024**	<0.020	**0.046**	<0.020	**0.067**	<0.021	<0.021	**0.062**
Anthracene	L	**3.5**	**0.42**	**0.35**	**0.048**	**0.98**	<0.020	**0.17**	**0.012**	**0.042**	**0.11**
Benzo[a]anthracene	H, C	**0.23**	**0.39**	**0.040**	**0.011 J**	**0.21**	<0.040	**0.014 J**	<0.043	<0.043	**0.017**
Benzo[b]fluoranthene	H, C	**0.058**	**0.069**	<0.019	<0.020	**0.075**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[k]fluoranthene	H	**0.043**	**0.034**	<0.019	<0.020	**0.056**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[a]pyrene	H, C	**0.049**	**0.033**	<0.038	<0.039	**0.061**	<0.040	<0.040	<0.043	<0.043	<0.041
Benzo[g,h,i]perylene	H, C	**0.0089 J**	<0.019	<0.019	<0.020	**0.037**	<0.020	<0.020	<0.021	<0.021	<0.020
Chrysene	H, C	**0.19**	**0.34**	**0.037**	**0.01 J**	**0.17**	<0.040	**0.013 J**	<0.043	<0.043	**0.014**
Dibenzo[a,h]anthracene	H, C	<0.037	<0.037	<0.038	<0.039	<0.038	<0.040	<0.040	<0.043	<0.043	<0.041
Fluoranthene	H	**3.1**	**3.3**	**0.48**	**0.077**	**1.7**	<0.020	**0.17**	**0.0096**	**0.018 J**	**0.17**
Fluorene	L	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	<0.037	<0.037	<0.038	<0.039	**0.036 J**	<0.040	<0.040	<0.043	<0.043	<0.041
Naphthalene	L	**2.8**	<0.074	**0.17**	**0.46**	**0.35**	<0.030	<0.056	<0.039	<0.021	**1.2**
Phenanthrene	L	**33.3**	**5.1**	**3.4**	**0.27**	**11.1**	<0.020	**0.043**	**0.017**	**0.019 J**	**0.26**
Pyrene	H	**1.6**	**1.8**	**0.20**	**0.041**	**0.73**	<0.020	**0.16**	**0.069**	**0.035**	**0.070**
Total LPAHs		**143.8**	**12.1**	**29.3**	**9.28**	**78.0**	MRL	**19.6**	**0.077**	**3.46**	**11.1**
Total HPAHs		**5.28**	**5.97**	**0.757**	**0.139**	**3.08**	MRL	**0.357**	**0.079**	**0.053**	**0.271**
Total Carcinogenic PAHs		**0.536**	**0.832**	**0.077**	**0.021**	**0.589**	MRL	**0.027**	**0.000**	MRL	**0.031**
Total PAHs		**149.1**	**18.1**	**30.1**	**9.42**	**81.0**	MRL	**19.9**	**0.156**	**3.51**	**11.4**

-- Not Analyzed; * Results pending

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

MRL Method Reporting Limit

J reported value is an estimate

Pore water samples with prefix SED were collected by EPA dive team on September 5 and 6, 2002. Samples with prefix EPA (SH) were collected by EPA shoreline team on September 10, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples analyzed by EPA Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 5 Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE		EPA (SH) 7 (ug/L)	EPA (SH) 8 (ug/L)	CreoDock N. Drum (ug/L)	CreoDock North-Flux (ug/L)	CreoDock S. Drum (ug/L)	FWDA -Flux (ug/L)	WC1-Flux (ug/L)	WC-Blue-Flux (ug/L)
Date Sampled		9/10/2002	9/10/2002	9/10/2002 5:10:00 PM	9/11/2002 7:10:00 AM	9/10/2001 3:27:00 PM	9/10/2002 3:15:00 PM	9/10/2002 2:10:00 PM	9/11/2002 8:15:00 AM
Pentachlorophenol		0.36	2.5	<10.0	<10.0	--	<10.0	<10.0	--
Arsenic		*	*	*	*	*	*	*	*
Chromium		*	*	*	*	*	*	*	*
Copper		*	*	*	*	*	*	*	*
Zinc		*	*	*	*	*	*	*	*
Polynuclear Aromatic Hydrocarbons (PAHs)									
Acenaphthene	L	10.3	23800	14.7	18.1	<0.100	<0.100	71.8	0.564
Acenaphthylene	L	0.11	141	<1.00	0.217	0.151	<0.100	<2.50	0.188
Anthracene	L	0.20	10200	<1.00	0.222	<0.100	<0.100	4.62	<0.100
Benzo[a]anthracene	H, C	0.011	2090	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[b]fluoranthene	H, C	<0.020	969	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[k]fluoranthene	H	<0.020	599	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[a]pyrene	H, C	<0.041	699	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[g,h,i]perylene	H, C	<0.020	115	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Chrysene	H, C	0.024	2270	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Dibenzo[a,h]anthracene	H, C	<0.041	95.2 J	<2.00	<0.200	<0.200	<0.200	<5.00	<0.200
Fluoranthene	H	0.26	13600	<1.00	0.227	<0.100	<0.100	6.05	0.405
Fluorene	L	--	--	1.59	1.64	<0.100	<0.100	31.8	<0.100
Ideno[1,2,3-cd]pyrene	H, C	<0.041	181	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Naphthalene	L	0.21	421000	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Phenanthrene	L	0.090	32000	<1.00	0.637	<0.100	<0.100	<2.50	<0.100
Pyrene	H	0.097	6170 J	<1.00	0.120	<0.100	<0.100	3.44	0.251
Total LPAHs		10.9	487141	16.3	20.8	0.151	MRL	108.2	0.752
Total HPAHs		0.392	26788	MRL	0.347	MRL	MRL	9.5	0.656
Total Carcinogenic PAHs		0.035	6419	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		11.3	513929	16.3	21.2	0.151	MRL	117.7	1.41

-- Not Analyzed; * Results pending

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

MRL Method Reporting Limit

J reported value is an estimate

Pore water samples with the prefix ODEQ were collected by DEQ on September 11, 2002. Samples approximately 1 foot below the sediment surface. Samples were analyzed by North Creek Analytica Oregon. Laboratory data sheets are provided in Appendix B.

ODEQ (SH-3) (ug/L)	ODEQ (SH-6) (ug/L)	ODEQ (SH-9) (ug/L)
9/11/2002	9/11/2002	9/11/2002
0.20	<0.020	<0.020
--	--	--
--	--	--
--	--	--
--	--	--
0.040	**3.0**	**118**
<0.020	**0.025**	**0.35**
0.13	**0.078**	**14.1**
0.042	**0.026 J**	**0.76**
0.050	**0.046**	**0.15**
0.054 J	**0.032 J**	**0.099**
<0.039	**0.069**	**0.097**
0.019 J	**0.054**	**0.012**
0.075	**0.023 J**	**0.62**
<0.039	<0.041	<0.040
0.46	**0.028**	**15.8**
--	--	--
0.021 J	**0.046**	**0.020**
<0.15	<0.069	**703**
0.47	**0.031**	**104**
0.21	**0.025**	**6.2**
0.640	**3.13**	**939**
0.931	**0.349**	**23.8**
0.207	**0.264**	**1.66**
1.57	**3.48**	**963**

; were collected from
il, Inc. Portland,

Table 6 Flux Chamber Measurements
McCormick & Baxter Creosoting Company
Portland, Oregon

Willamette Cove					
Location	**Date**	**Time**	**Period**	**Flux (ml)**	**Rate (ml/hour)**
Steel Drum	9/10/2002	10:47			
		14:10	5.3	15	2.8
	9/10/2002	14:10	Flux sample collected		
	9/11/2002	8:00	17.8	1080	60.7
Blue Drum	9/10/2002	10:55			
		13:20	3.4	15	4.4
	9/10/2002	14:40	Flux sample collected		
	9/11/2002	8:10	17.8	2310	129.8
FWDA					
Location	**Date**	**Time**	**Period**	**Flux (ml)**	**Rate (ml/hour)**
FWDA	9/10/2002	10:06			
		15:07	5.0	0	0.0
		15:15	Flux sample collected		
	9/11/2002	7:30	17.8	1080	60.7
		9:00	1.5	30	20.0
Creosote Dock					
Location	**Date**	**Time**	**Period**	**Flux (ml)**	**Rate (ml/hour)**
South Drum	9/10/2002	11:30			
		17:00	5.5	-35	-6.4
	9/10/2002	17:30	Flux sample collected		
	9/11/2002	7:15	13.8	0	0.0
North Drum	9/10/2002	11:40			
		16:40	5.0	2715	543.0
	9/10/2002	17:30	Flux sample collected		
	9/11/2002	7:10	13.7	2260	165.3
			Flux sample collected (from bag)		

Table 7 Sediment Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

CONTAMINANT OF CONCERN		SED-1 (ug/kg)	SED-2 (ug/kg)	SED-3 (ug/kg)	SED-4 (ug/kg)	SED-5 (ug/kg)	SED-6 (ug/kg)	SED-7 (ug/kg)	SED-8 (ug/kg)	SED-9 (ug/kg)	SED-51 (5A) (ug/kg)	EPA (SH) 6 (ug/kg)
Date Sampled		**9/5/2002**	**9/5/2002**	**9/6/2002**	**9/6/2002**	**9/5/2002**	**9/6/2002**	**9/5/2002**	**9/5/2002**	**9/6/2002**	**9/5/2002**	**9/10/2002**
Pentachlorophenol		27	<1.6	360	20	3.7	58	630	24	26	2.8	130
Arsenic		*	*	*	*	*	*	*	*	*	*	*
Chromium		*	*	*	*	*	*	*	*	*	*	*
Copper		*	*	*	*	*	*	*	*	*	*	*
Zinc		*	*	*	*	*	*	*	*	*	*	*
Polynuclear Aromatic Hydrocarbons (PAHs)												
Acenaphthene	L	48800	3.4	1720	274	2130	405	1370	18.6	902	440	14800
Acenaphthylene	L	161	2.4	113	19.7	<46.6	14.8	29.3	6.7 J	30.1	5.3 J	81.4
Anthracene	L	23300	6.7	157	526	466	213	1480	31.8 J	358	110 J	8420
Benzo[a]anthracene	H, C	13200	29.5	36.0	787	380	333	844	90.7 J	485	201 J	3380
Benzo[b]fluoranthene	H, C	6300	25.1	16.4	632	250	373	558	99.9 J	383	130 J	1010
Benzo[k]fluoranthene	H	4740	16.9	10.1	419	178	199	327 J	69.3 J	235	86.8 J	840
Benzo[a]pyrene	H, C	4930	17.1	16.0	298	146	181	452	55.9 J	230	84 J	763
Benzo[g,h,i]perylene	H, C	1120	11.9	<11.9	93.3	47.9	68.2	207	32 J	82.1	25.1 J	139
Chrysene	H, C	12700	33.3	35.4	999	408	339	861	92.2 J	565	190 J	2750
Dibenzo[a,h]anthracene	H, C	243	1.3	<23.8	64.3 J	<93.2	40.3 J	93 J	17.6 J	17.2	14.6 J	126
Fluoranthene	H	57700	65.9	306	5250 J	1300	1020	3790	203 J	2850	892 J	20300
Fluorene	L	--	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	1590	12.5	<23.8	139	63.7	92.4	218	37.9 J	110	32.8 J	221
Naphthalene	L	3180	12.2	241000	310	832	495	810	41.4 J	2100	651 J	3990
Phenanthrene	L	94300	18.8	956	2450	2280	668	4310	61.5 J	2180	887 J	35000
Pyrene	H	31000	48.1	223	2290	683	525 J	1990	148 J	1240	399 J	9600
Total LPAHs		169741	43.5	243946	3580	5708	1796	7999	160	5570	2093	62291
Total HPAHs		133523	262	643	10972	3457	3171	9340	847	6197	2055	39129
Total Carcinogenic PAHs		40083	131	104	3013	1296	1427	3233	426	1872	678	8389
Total PAHs		303264	305	244589	14551	9165	4967	17339	1007	11767	4149	101420

-- Not Analyzed; * Results pending

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

J reported value is an estimate

Sediment samples with the prefix SED were collected by EPA dive team on September 5 and 6, 2002. The sample with the prefix EPA (SH) was collected by EPA shoreline team on September 10 ,2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 8 Manometer Readings
McCormick & Baxter Creosoting Company
Portland, Oregon

Date	Time	Probe Depth (feet)	Probe Depth (cm)	Groundwater Measurement (cm)	Surface Water Measurement (cm)	Head Difference (cm)	Vertical Gradient
Willamette Cove							
9/10/2002	13:40	5.3	161.54	76	72	4	0.02
		2.5	76.20	67.5	67	1	0.01
		1.75	53.34	65	62	3	0.06
		1.2	NAPL	--	--	--	--
rising tide							
9/11/2002	8:30	6	182.88	56	71	-16	-0.08
		3	91.44	68.5	75.5	-7	-0.08
FWDA							
9/10/2002	15:40	5.3	161.54	75.5	69	7	0.04
		2.7	82.30	72.5	67.5	5	0.06
		1.1	33.02	75	71.5	4	0.11
9/11/2002	15:40	5.3	161.54	75.5	69	7	0.04
		2.7	82.30	72.5	67.5	5	0.06
		1.1	33.02	75	71.5	4	0.11
Creosote Dock							
9/10/2002	16:30	3.6	109.73	74	66	8	0.07
		2.45	74.68	79	71	8	0.11
9/11/2002	16:30	3.6	109.73	74	66.00	8	0.07
		2.45	74.68	79	71.00	8	0.11

Table 9 Groundwater Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

CONTAMINANT OF CONCERN		ODEQ (SH-1) (ug/L)	ODEQ (SH-2) (ug/L)	ODEQ (SH-3) (ug/L)	ODEQ (SH-4) (ug/L)	ODEQ (SH-5) (ug/L)	ODEQ (SH-6) (ug/L)	ODEQ (SH-7) (ug/L)	ODEQ (SH-8) (ug/L)	ODEQ (SH-9) (ug/L)
Date Sampled		**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**
Pentachlorophenol		**1.1**	**0.021**	**0.20**	<0.020	<0.022	<0.020	<0.020	<0.020	<0.020
Arsenic		--	--	--	--	--	--	--	--	--
Chromium		--	--	--	--	--	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons (PAHs)										
Acenaphthene	L	**10100**	**1.3**	**0.040**	**42.1**	**1.5**	**3.0**	**222**	**163**	**118**
Acenaphthylene	L	**87.7**	<0.020	<0.020	**0.24**	<0.11	**0.025**	**0.57**	**0.44**	**0.35**
Anthracene	L	**4140**	**0.59**	**0.13**	**1.6**	**0.26**	**0.078**	**19.6**	**17.6**	**14.1**
Benzo[a]anthracene	H, C	**720**	**0.030**	**0.042**	**0.12**	<0.22	**0.026 J**	**0.28**	**0.36**	**0.76**
Benzo[b]fluoranthene	H, C	**264**	<0.020	**0.050**	**0.028**	<0.11	**0.046**	**0.022**	**0.046**	**0.15**
Benzo[k]fluoranthene	H	**157**	<0.020	**0.054 J**	**0.023 J**	<0.11	**0.032 J**	**0.024**	**0.04 J**	**0.099**
Benzo[a]pyrene	H, C	**180**	<0.041	<0.039	**0.018 J**	<0.22	**0.069**	**0.019**	**0.031 J**	**0.097**
Benzo[g,h,i]perylene	H, C	**29.2**	<0.020	**0.019 J**	<0.020	**0.071**	**0.054**	<0.020	<0.020	**0.012**
Chrysene	H, C	**533**	**0.048**	**0.075**	**0.095**	**0.11**	**0.023 J**	**0.21**	**0.29**	**0.62**
Dibenzo[a,h]anthracene	H, C	**20.0**	<0.041	<0.039	<0.041	<0.22	<0.041	<0.040	<0.040	<0.040
Fluoranthene	H	**4910**	**0.67**	**0.46**	**1.9**	**1.2**	**0.028**	**12.7**	**12.6**	**15.8**
Fluorene	L	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	**46.0**	<0.041	**0.021 J**	<0.041	<0.22	**0.046**	<0.040	<0.040	**0.020**
Naphthalene	L	**62900**	**8.8**	<0.15	**1.4**	**0.38**	<0.069	**958**	**397**	**703**
Phenanthrene	L	**11600**	**3.6**	**0.47**	**12.8**	**1.1**	**0.031**	**151**	**125**	**104**
Pyrene	H	**2110**	**0.30**	**0.21**	**0.89**	**0.52**	**0.025**	**5.2**	**5.7**	**6.2**
Total LPAHs		**88828**	**14.3**	**0.640**	**58.1**	**3.24**	**3.13**	**1351**	**703**	**939**
Total HPAHs		**8969**	**1.05**	**0.931**	**3.07**	**1.90**	**0.349**	**18.5**	**19.1**	**23.8**
Total Carcinogenic PAHs		**1792**	**0.078**	**0.207**	**0.261**	**0.181**	**0.264**	**0.531**	**0.727**	**1.66**
Total PAHs		**97797**	**15.3**	**1.57**	**61.2**	**5.14**	**3.48**	**1370**	**722**	**963**

-- Not Analyzed

L low molecular weight PAH (LPAH)

H high molecular weight PAH (HPAH)

C Carcinogenic PAH

J reported value is an estimate

Groundwater samples were collected by DEQ using MHE samplers on September 11, 2002. Samples were analyzed by North Creek Analytical, Inc. Portland, Oregon. Laboratory data sheets are provided in Appendix B.

Table 10

GROUNDWATER ELEVATION GRADIENTS
JULY 1 THROUGH DECEMBER 31, 2001
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

TFA Monitoring Wells

Date	MW-Os Groundwater Elevation (ft, MSL)	MW-LRs Groundwater Elevation (ft, MSL)	Horizontal Distance (ft)	Angle of Flowpath Deviation (degrees)	Horizontal Gradient (ft/ft)	Horizontal Gradient (ft/mile)
Sep-02	10.15	3.43	767	28	0.010	52
Dec-02	9.53	4.54	767	36	0.008	42

FWDA Monitoring Wells

Date	MW-Js Groundwater Elevation (ft, MSL)	MW-18s Groundwater Elevation (ft, MSL)	Horizontal Distance (ft)	Angle of Flowpath Deviation (degrees)	Horizontal Gradient (ft/ft)	Horizontal Gradient (ft/mile)
Sep-02	8.57	2.56	689	3	0.009	46
Dec-02	8.26	7.69	689	6	0.001	4

Key:
ft = Feet.
ft/ft = Feet per foot.
ft/mile = Feet per mile.
FWDA = Former waste disposal area.
MSL = Mean sea level.
TFA = Tank farm area.

Table 11

JULY 1, 2002 THROUGH DECEMBER 31, 2002
SEMIANNUAL GROUNDWATER SAMPLING ANALYTICAL RESULTS
SAMPLE COLLECTION DATES: SEPTEMBER 23, 25 AND 26, 2002
MCCORMICK & BAXTER CREOSOTING COMPANY SITE
PORTLAND, OREGON
(ug/L)

Sample Identification	Analytes									
	Arsenic	Copper	Chromium	Zinc	PCP	Total PAHs	Total LPAHs	Total HPAHs	Total CPAHs	2,3,7,8-TCDD TEQ
EW-19s	-	-	-	-	-	-	-	-	-	-
MW-Ks	**4.76**	**2.96**	**1.90**	**217**	1 U	**0.92**	**0.92**	MRL	MRL	-
MW-LRs	**10.9**	2 U	**1.99**	5 U	**114**	**3,157**	**3,156**	**1.54**	MRL	-
MW-Os	**10.3**	**23.9**	**6.63**	**2,160**	1 U	MRL	MRL	MRL	MRL	-
MW-2s	1 U	2 U	**1.83**	5 U	1 U	**0.15**	**0.15**	MRL	MRL	-
MW-3s	**2.09**	2 U	**1.35**	5 U	1 U	**0.11**	**0.11**	MRL	MRL	-
MW-4s	**7.47**	2 U	**1.64**	5 U	1 U	**2.71**	**2.71**	MRL	MRL	-
MW-5s	**7.47**	2 U	**1.37**	5 U	100 U	**2,088**	**2,070**	**18.5**	**1.92**	-
MW-5s Duplicate	**7.91**	2 U	**1.60**	5 U	100 U	**2,047**	**2,030**	**17.6**	**1.89**	-
MW-8i	**118**	2 U	**1.23**	5 U	**233**	**9,090**	**9,071**	**18.3**	**4.43**	-
MW-13i	**18.4**	2 U	**2.78**	5 U	1 U	**1.52**	**1.52**	MRL	MRL	-
MW-19s	-	-	-	-	-	-	-	-	-	-
EW-25s	-	-	-	-	-	-	-	-	-	-
MW-18s	**24.3**	2 U	**1.80**	5 U	**205**	**6,061**	**6,057**	**4.49**	**0.11**	**3.5×10^{-7}**
MW-23d	**2.62**	2 U	1 U	5 U	1 U	**0.85**	**0.37**	**0.48**	MRL	-
MW-25s	**15.7**	2 U	**1.07**	5 U	1 U	**928**	**928**	**0.36**	MRL	-
MW-35s	1 U	2 U	1 U	5 U	1 U	**1.96**	**1.96**	MRL	MRL	-
MW-31s	**12.6**	2 U	1 U	5 U	1 U	**196**	**195**	**1.22**	MRL	**2.1×10^{-7}**
RINSATE	1 U	2 U	1 U	**6.55**	1 U	**2.18**	**2.04**	**0.15**	MRL	-

ACL CONCENTRATIONS (ug/L)									
Arsenic	Copper	Chromium	Zinc	PCP	Total PAHs	Total LPAHs	Total HPAHs	Total CPAHs	2,3,7,8-TCDD TEQ
1,000	1,000	1,000	1,000	5,000	43,000	-	-	-	0.0002

Notes:
Analyte detections, above reporting limits, are shown in reverse highlighted text.
Results reported in 3 signifigant digits.
Groundwater samples were not collected from EW-19s and MW-19s in September 2002 because of the presence of lighter-than-water nonaqueous phase liquid (LNAPL) in the well.
Total arsenic, chromium, copper, and zinc analysis by EPA Method 6000/7000 series.

Key:
= exceeds ACL concentrations
ACL = Alternative cleanup level, as listed in the EPA Record of Decision.
CPAHS =Carcinogenic PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h,)anthracene, and indeno(1,2,3-cd)pyrene.
EPA =United States Environmental Protection Agency.
HPAHs =High molecular weight PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, fluoranthene, chrysene, dibenzo(a,h,)anthracene, pyrene, and indeno(1,2,3-cd)pyrene.
J = Concentration qualified as estimated based on QA/QC results associated with this sample.
LPAHs =Light-molecular weight PAHs (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene)
MRL = Analyzed for, but not detected. Multiple compounds represented; therefore, no reporting limit is displayed.
PAHs =Polynuclear aromatic hydrocarbons by EPA Method 8270 SIM.
PCP =Pentachlorophenol by EPA Method 8270 SIM.
SIM =Selective ion monitoring.
2,3,7,8-TCDD TEQ =2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalency quotient by EPA Method 1613.
U =Compound was analyzed for, but was not detected; the corresponding value is the maximum reporting limit for the analyte.
ug/L = Micrograms per liter.
-- = Not available, not applicable, or not analyzed.
TCDD =Tetrachlorodibenzo-p-dioxin.

Table 12

HISTORICAL AND MONTHLY DNAPL THICKNESS
July 1 through December 31, 2002
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

Well ID	Maximum DNAPL Thickness (ft)	Date	July 2002 DNAPL Thickness (ft)	August 2002 DNAPL Thickness (ft)	September 2002 DNAPL Thickness (ft)	October 2002 DNAPL Thickness (ft)	November 2002 DNAPL Thickness (ft)	December 2002 DNAPL Thickness (ft)
Tank Farm Area								
EW-1s	4.7	Oct-94	0.00	0.00	0.00	0.00	0.00	0.00
EW-4s	6.2	Mar-93	0.00	0.00	0.00	0.00	0.00	0.00
EW-5s	2.92	Dec-95	0.00	0.00	0.00	0.00	0.00	0.00
EW-7s	2.09	Dec-94	0.00	0.00	0.00	0.00	0.00	0.00
EW-8s	2.7	Jul-93	0.00	0.00	0.00	0.00	0.00	0.00
EW-12s	4.5	Jan-99	0.00	0.00	0.00	0.00	0.00	0.00
EW-17s	1.41	Nov-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-18s	2.47	Aug-97	0.00	0.00	0.00	0.00	0.00	0.00
EW-24s	10.27	Mar-00	0.00	0.00	0.00	0.00	0.00	0.00
EW-25s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-Is	9.93	Aug-87	0.00	0.00	0.00	0.00	0.00	0.00
MW-LRs	nd	-	nm	nm	nm	nm	nm	nm
MW-Ps	nd	-	nm	nm	nm	nm	nm	nm
MW-Rs	0.55	Oct-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-7s	4.55	Jan-98	nm	nm	nm	nm	nm	nm
MW-8i	3.62	Mar-96	0.00	0.00	0.00	0.00	0.00	0.00
MW-10s	0.60	Dec-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-22i	4.11	Mar-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-23d	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-29s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-1s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-5s	ND	-	0.00	0.00	0.00	0.00	0.00	0.00
Former Waste Disposal Area								
EW-2s	1.90	Aug-91	0.00	0.00	0.00	0.00	0.00	0.00
EW-3s	0.35	May-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-6s	3.40	Aug-93	0.00	0.00	0.00	0.00	0.00	0.00
EW-9s	6.10	Dec-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-10s	1.36	Aug-97	0.00	0.00	0.00	0.00	0.00	0.00
EW-13s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-14s	1.90	Dec-97	0.00	0.00	0.00	0.00	0.00	0.00
EW-15s	0.72	Mar-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-16s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-19s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-20s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-22s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-23s	0.07	Apr-00	0.00	0.00	0.00	0.00	0.00	0.00
MW-Ds	6.01	Jan-94	0.00	0.00	0.00	0.00	0.00	0.00
MW-Es	4.20	Aug-87	0.00	0.00	0.00	0.00	0.00	0.00
MW-Fs	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-Gs	14.85	Mar-91	0.00	0.00	0.00	0.00	0.00	0.00
MW-18s	nd	-	nm	nm	nm	nm	nm	nm
MW-20i	34.32	Dec-94	0.00	0.00	0.00	0.00	0.00	0.00
MW-21s	2.25	Aug-99	0.00	0.00	0.00	0.00	0.00	0.00
MW-34i	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
Other Areas								
EW-11s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-1s	3.16	Jan-98	nm	nm	nm	nm	nm	nm
MW-19s	2.14	Dec-98	0.00	0.00	0.00	0.00	0.00	0.00

Key:
- = Not applicable.
DNAPL = Denser-than-water nonaqueous phase liquid.
ft = Feet.
ID = Identification.
NAPL = Nonaqueous phase liquid.
nd = Nondetect.
nm = Not measured.

Notes:
1. The accuracy of the oil/water interface probe is not reliable at NAPL thicknesses less t 0.01 foot. Therefore, trace amounts of NAPL may exist where the measured NAPL va 0.00 foot. When a NAPL sheen has been observed (on the probe tip) in these cases, value is noted as *trace*.
2. The oil/water interface probe was out of service during January 2002 for repairs.

Table 13

HISTORICAL NAPL WELL CLASSIFICATIONS
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

Well ID	3rd Quarter 1997	4th Quarter 1997	1st Quarter 1998	2nd Quarter 1998	2nd Half 1998	1st Half 1999	2nd Half 1999	1st Half 2000	2nd Half 2000	1st Half 2001	2nd Half 2001	1st Half 2002	2nd Half 2002
Tank Farm Area													
EW-1s	●	●	●	●	◒	●	◒	-	⊕	◓	◓	⊕	◓
EW-4s	●	◓	◓	◓	◒	⊕	◒	◓	⊕	⊕	⊕	⊕	⊕
EW-5s	●	●	●	●	●	●	-	-	⊕	⊕	⊕	⊕	⊕
EW-7s	●	◓	◓	◓	●	⊕	●	◓	⊕	⊕	⊕	⊕	⊕
EW-8s	◒	◒	◒	●	◒	●	-	-	-	⊕	⊕	⊕	⊕
EW-12s	●	●	●	●	◒	◒	-	-	-	◓	⊕	⊕	⊕
EW-17s	●	◓	◓	●	●	◓	●	◓	◓	◓	◓	⊕	⊕
EW-18s	●	◓	◓	◓	●	◒	-	-	◓	◓	◓	◓	◓
EW-24s	-	-	-	-	◒	●	●	●	●	◓	◓	◒	◓
EW-25s	-	-	-	-	⊕	⊕	⊕	◓	◓	⊕	⊕	⊕	⊕
MW-Is	●	●	●	●	●	●	-	-	-	-	◓	⊕	◓
MW-LRs	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	-	-	⊕	-
MW-Ps	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	◓	-	⊕	-
MW-Rs	◓	◓	◓	◓	●	◓	●	●	◓	◓	◓	◓	◓
MW-7s	◒	◒	●	◒	◒	◒	●	-	⊕	◓	⊕	⊕	-
MW-8i	◒	◒	◒	◒	◒	◒	-	-	⊕	⊕	⊕	⊕	⊕
MW-10s	●	◓	◓	●	●	◓	●	●	◓	◓	◓	◓	◓
MW-11s	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	-	-	-
MW-22i	◒	◒	◒	●	●	◒	-	-	-	⊕	⊕	⊕	⊕
MW-23d	-	-	-	-	-	-	-	-	-	-	-	-	⊕
MW-29	-	-	-	-	-	-	-	-	-	-	-	-	⊕
TM-1s	-	-	-	-	-	-	◓	◓	-	⊕	⊕	⊕	⊕
TM-3s	-	-	-	-	-	-	⊕	⊕	-	⊕	⊕	⊕	-
TM-4s	-	-	-	-	-	-	⊕	⊕	-	⊕	⊕	⊕	-
TM-5s	-	-	-	-	-	-	◓	⊕	◓	⊕	⊕	⊕	⊕
Former Waste Disposal Area													
EW-2s	◒	⊕	⊕	◓	●	●	●	◒	◒	⊕	⊕	⊕	⊕
EW-3s	◓	◓	●	●	●	◓	◓	◓	◓	◓	◓	◓	◓
EW-6s	●	●	●	◒	●	●	●	-	-	◓	◓	◓	◓
EW-9s	◒	●	●	●	●	◒	●	◒	◒	⊕	⊕	⊕	⊕
EW-10s	●	◓	◓	◓	◓	◓	●	●	◓	◓	◓	◓	◓
EW-13s	◒	⊕	⊕	⊕	⊕	⊕	◓	⊕	⊕	⊕	⊕	⊕	⊕
EW-14s	◓	●	●	●	●	◓	●	●	◓	◓	◓	◓	◓
EW-15s	●	◓	●	◓	◓	●	◓	◓	◓	◓	◓	◓	◓
EW-16s	-	-	-	-	-	-	-	-	-	-	-	-	⊕
EW-19s	◒	⊕	⊕	⊕	⊕	◓	◓	◓	◓	⊕	⊕	⊕	⊕
EW-20s	◓	⊕	◓	◓	⊕	◓	●	⊕	⊕	⊕	⊕	⊕	⊕
EW-22s	-	-	-	-	⊕	◓	⊕	◓	⊕	⊕	⊕	⊕	⊕
EW-23s	-	-	-	-	◓	◓	●	●	◓	◓	◓	◓	◓
MW-Ds	◒	●	●	●	●	●	◒	-	-	◓	◓	◓	◓
MW-Es	●	●	●	●	●	◓	-	-	-	◓	◓	◓	◓
MW-Fs	-	-	-	-	-	-	-	-	-	-	-	-	⊕
MW-Gs	●	●	●	●	●	●	◒	-	-	◓	◓	●	⊕
MW-18s	◒	⊕	◓	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	--
MW-20i	◒	●	●	●	●	◒	◒	-	-	⊕	⊕	⊕	◓
MW-21s	●	●	●	●	●	●	●	●	◓	◓	◓	◓	◓
MW-34i	-	-	-	-	-	-	-	-	-	-	-	-	⊕
Other Areas													
EW-11s	◒	◒	⊕	⊕	⊕	⊕	◓	⊕	⊕	⊕	⊕	⊕	⊕
MW-1s	◓	◓	●	●	◓	◓	◓	◓	◓	◓	◓	◓	◓
MW-19s	◒	◒	◒	●	●	◓	◒	◒	◓	⊕	⊕	⊕	⊕
MW-35s	-	-	-	-	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	-

Key:
◓ =|LNAPL thicknesses measured during reporting period.
◒ =|DNAPL thicknesses measured during reporting period.
● =|LNAPL and DNAPL thicknesses measured during reporting period.
⊕ =|No NAPL thicknesses measured during reporting period.
- = Not measured.
DNAPL = Denser-than-water nonaqueous phase liquid.
ID = Identification.
LNAPL = Lighter-than-water nonaqueous phase liquid.
NAPL = Nonaqueous phase liquid.

Table 14

PURE-PHASE NAPL EXTRACTION SUMMARY
July through December, 2002
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

	NAPL Extracted for Period (US Gallons)
Manual Extraction[1] - TFA Wells	
EW-18s	6.08
Subtotal:	*6.08*
Manual Extraction[1] - FWDA Wells	
EW-3s	0.50
EW-6s	3.70
EW-10s	8.60
EW-14s	0.03
EW-15s	19.20
EW-23s	9.28
MW-Ds	0.48
MW-Rs	0.50
MW-21s	2.48
Subtotal:	*44.25*
Total Manual Extraction:	**50.33**
LNAPL Skimmers - TFA Wells	
MW-Rs	0.19
Subtotal:	*0.19*
LNAPL Skimmers - FWDA Wells	
EW-10s	2.55
EW-15s	1.50
EW-23s	0.71
MW-Ds	0.00
MW-21s	2.18
Subtotal:	*6.94*
Total LNAPL Skimmer Extraction:	**7.13**
TOTAL NAPL EXTRACTED:	**57.46**

Key:
FWDA = Former waste disposal area.
LNAPL = Lighter-than-water nonaqueous phase liquid.
NAPL = Nonaqueous phase liquid.
TFA = Tank farm area.
US = United States.

Notes:
[1] Manual extraction is typically conducted biweekly when NAPL accumulation measurements exceed 0.5 feet in a particular well.

F

Complete Analytical Tables for September 2002 Sampling Event

Table 1a Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-51 (5.4)
Date Sampled	9/5/2002	9/5/2002	9/6/2002	9/6/2002	9/5/2002	9/6/2002	9/5/2002	9/5/2002	9/6/2002	9/5/2002
NWTPH-Dx										
TPH Diesel Range	--	--	--	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--	--	--	--
PAHs (8250-SIM)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
2-Chloronaphthalene	<0.036	<0.037	<0.039	<0.037	<0.036	<0.038	<0.037	<0.038	<0.037	<0.037
9H-Fluorene	<0.018	<0.019	<0.020	<0.019	<0.018	**10.0**	<0.019	<0.019	<0.019	<0.019
Acenaphthene	<0.018	<0.019	<0.020	<0.019	<0.018	**9.8**	<0.019	**0.013 J**	<0.019	<0.019
Acenaphthylene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.042**	<0.019	<0.019	<0.019	<0.019
Anthracene	<0.018	<0.019	<0.020	<0.019	<0.018	**3.8**	<0.019	<0.019	<0.019	<0.019
Benzo[a]anthracene	<0.036	<0.037	<0.039	<0.037	<0.036	**1.5**	<0.037	**0.0051 J**	**0.0041 J**	<0.037
Benzo[a]pyrene	<0.036	<0.037	<0.039	<0.037	<0.036	**0.44**	<0.037	<0.038	<0.037	<0.037
Benzo[g,h,i]perylene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.087**	<0.019	<0.019	<0.019	<0.019
Benzo[b]fluoranthene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.77**	<0.019	<0.019	<0.019	<0.019
Benzo[k]fluoranthene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.39**	<0.019	<0.019	<0.019	<0.019
Chrysene	<0.036	<0.037	<0.039	<0.037	<0.036	**1.2**	<0.037	**0.0067 J**	**0.0039 J**	<0.037
Dibenz[a,h]anthracene	<0.036	<0.037	<0.039	<0.037	<0.036	**0.093 J**	<0.037	<0.038	<0.037	<0.037
Dibenzofuran	<0.018	<0.019	<0.020	<0.019	<0.018	**5.7**	<0.019	<0.019	<0.019	<0.019
Fluoranthene	<0.018	**0.0084 J**	**0.032**	**0.0071 J**	**0.0041 J**	**11.9**	**0.0083 J**	**0.024**	**0.018 J**	**0.0043 J**
Fluorene	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	<0.036	<0.037	<0.039	<0.037	<0.036	**0.13**	<0.037	<0.038	<0.037	<0.037
Naphthalene	<0.018	<0.019	<0.020	<0.019	<0.018	**3.3**	<0.019	<0.019	<0.019	<0.019
Naphthalene, 1-methyl-	<0.018	<0.019	<0.020	<0.019	<0.018	**1.3**	<0.019	<0.019	<0.019	<0.019
Naphthalene, 2-methyl-	<0.018	<0.019	<0.020	<0.019	<0.018	**1.3**	<0.019	<0.019	<0.019	<0.019
Phenanthrene	<0.018	**0.0098 J**	**0.013 J**	<0.019	<0.018	**22.7**	<0.019	<0.019	**0.0087 J**	<0.019
Pyrene	<0.018	<0.019	**0.016 J**	<0.019	<0.018	**5.3**	<0.019	**0.013 J**	**0.011 J**	<0.019
Retene	<0.018	<0.019	<0.020	<0.019	<0.018	<0.019	<0.019	<0.019	<0.019	<0.019
SVOCs (EPA 8270C)										
Acenaphthene	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzoic Acid	--	--	--	--	--	--	--	--	--	--
Benzyl Alcohol	--	--	--	--	--	--	--	--	--	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	--	--	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	--	--	--	--	--	--	--	--
2-Chlorophthalene	--	--	--	--	--	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	--	--	--	--	--

Table 1a Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-51 (5.4)
Date Sampled	9/5/2002	9/5/2002	9/6/2002	9/6/2002	9/5/2002	9/6/2002	9/5/2002	9/5/2002	9/6/2002	9/5/2002
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--	--
SVOCs (EPA 8270C)										
Di-n-butyl phthalate	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
3,3'-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--	--	--	--	--	--
2,4-Dnintrotoluene	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--	--	--	--
3-,4-Methylphenol	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	<0.018	<0.019	**0.079**	<0.019	<0.018	**0.078**	**0.051**	**0.025**	<0.019	**0.025**

-- Not analyzed
MRL Method Reporting Limit
J reported value is an estimate

Surface water grab samples collected by EPA dive team in September 2002. Samples collected approximately 1 foot off river bottom. Samples analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

	UNFILTERED						
ANALYTE	*SPMD-1 grab*	*SPMD-2 grab*	*SPMD-5 grab*	*SPMD-11 grab*	*SPMD-15 grab*	*SPMD-15 grab (duplicate)*	*SPMD-20 grab*
Date Sampled	*9/12/2002 10:00*	*9/12/02 10:55*	*9/12/2002 17:10*	*9/12/2002 16:00*	*9/12/2002 15:00*	*9/12/2002 15:00*	*9/12/2002 13:40*
NWTPH-Dx					*(mg/L)*	*(mg/L)*	
TPH Diesel Range	--	--	--	--	<0.0253	<0.0249	--
TPH Heavy Oil Range	--	--	--	--	<0.0506	<0.0498	--
PAHs (8250-SIM)	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*
2-Chloronaphthalene	--	--	--	--	--	--	--
9H-Fluorene	--	--	--	--	--	--	--
Acenaphthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Acenaphthylene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Anthracene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]anthracene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]pyrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[g,h,i]perylene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[b]fluoranthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[k]fluoranthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Chrysene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Dibenz[a,h]anthracene	<0.0472	<0.0476	<0.0472	<0.0478	<0.0506	<0.0498	<0.0481
Dibenzofuran	--	--	--	--	--	--	--
Fluoranthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	0.0313	<0.0240
Fluorene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Ideno[1,2,3-cd]pyrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Naphthalene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Naphthalene, 1-methyl-	--	--	--	--	--	--	--
Naphthalene, 2-methyl-	--	--	--	--	--	--	--
Phenanthrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Pyrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Retene	--	--	--	--	--	--	--
SVOCs (EPA 8270C)							
Acenaphthene	--	--	--	--	<1.27	<1.24	--
Acenaphthylene	--	--	--	--	<1.27	<1.24	--
Anthracene	--	--	--	--	<1.27	<1.24	--
Benzo[a]anthracene	--	--	--	--	<1.27	<1.24	--
Benzo[a]pyrene	--	--	--	--	<1.27	<1.24	--
Benzo[g,h,i]perylene	--	--	--	--	<1.27	<1.24	--
Benzo[b]fluoranthene	--	--	--	--	<1.27	<1.24	--
Benzo[k]fluoranthene	--	--	--	--	<1.27	<1.24	--
Benzoic Acid	--	--	--	--	<12.7	<12.4	--
Benzyl Alcohol	--	--	--	--	<2.53	<2.49	--
4-Bromophenyl phenyl ether	--	--	--	--	<1.27	<1.24	--
Butyl benzyl phthalate	--	--	--	--	<1.27	<1.24	--
4-Chloro-3-methylphenol	--	--	--	--	<1.27	<1.24	--
4-Chloroaniline	--	--	--	--	<5.06	<4.98	--
Bis(2-chloroethoxy)methane	--	--	--	--	<2.53	<2.49	--
Bis(2-chloroethyl)ether	--	--	--	--	<1.27	<1.24	--
Bis(2-chloroisopropyl)ether	--	--	--	--	<2.53	<2.49	--
2-Chlorophthalene	--	--	--	--	<1.27	<1.24	--
2-Chlorophenol	--	--	--	--	<1.27	<1.24	--

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

	UNFILTERED						
ANALYTE	*SPMD-1 grab*	*SPMD-2 grab*	*SPMD-5 grab*	*SPMD-11 grab*	*SPMD-15 grab*	*SPMD-15 grab (duplicate)*	*SPMD-20 grab*
Date Sampled	*9/12/2002 10:00*	*9/12/02 10:55*	*9/12/2002 17:10*	*9/12/2002 16:00*	*9/12/2002 15:00*	*9/12/2002 15:00*	*9/12/2002 13:40*
4-Chlorophenyl phenyl ether	--	--	--	--	<1.27	<1.24	--
Chrysene	--	--	--	--	<1.27	<1.24	--
SVOCs (EPA 8270C)							
Di-n-butyl phthalate	--	--	--	--	<1.27	<1.24	--
Di-n-octyl phthalate	--	--	--	--	<1.27	<1.24	--
Dibenz[a,h]anthracene	--	--	--	--	<1.27	<1.24	--
Dibenzofuran	--	--	--	--	<1.27	<1.24	--
1,2-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
1,3-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
1,4-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
3,3'-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
2,4-Dichlorophenol	--	--	--	--	<1.27	<1.24	--
Diethyl phthalate	--	--	--	--	<1.27	<1.24	--
2,4-Dimethylphenol	--	--	--	--	<2.53	<2.49	--
Dimethyl phthalate	--	--	--	--	<1.27	<1.24	--
4,6-Dinitro-2-methylphenol	--	--	--	--	<2.53	<2.49	--
2,4-Dinitrophenol	--	--	--	--	<6.33	<6.22	--
2,4-Dnintrotoluene	--	--	--	--	<1.27	<1.24	--
2,6-Dinitrotoluene	--	--	--	--	<1.27	<1.24	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	<2.53	<2.49	--
Fluoranthene	--	--	--	--	<1.27	<1.24	--
Fluorene	--	--	--	--	<1.27	<1.24	--
Hexachlorobenzene	--	--	--	--	<1.27	<1.24	--
Hexachlorobutadiene	--	--	--	--	<2.53	<2.49	--
Hexachlorocyclopentadiene	--	--	--	--	<2.53	<2.49	--
Hexachloroethane	--	--	--	--	<2.53	<2.49	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	<1.27	<1.24	--
Isophorone	--	--	--	--	<1.27	<1.24	--
2-Methylnaphthalene	--	--	--	--	<1.27	<1.24	--
2-Methylphenol	--	--	--	--	<2.53	<2.49	--
3-,4-Methylphenol	--	--	--	--	<1.27	<1.24	--
Naphthalene	--	--	--	--	<1.27	<1.24	--
2-Nitroaniline	--	--	--	--	<1.27	<1.24	--
3-Nitroaniline	--	--	--	--	<2.53	<2.49	--
4-Nitroaniline	--	--	--	--	<2.53	<2.49	--
Nitrobenzene	--	--	--	--	<1.27	<1.24	--
2-Nitrophenol	--	--	--	--	<1.27	<1.24	--
4-Nitrophenol	--	--	--	--	<6.33	<6.22	--
N-Nitrosodi-n-propylamine	--	--	--	--	<2.53	<2.49	--
N-Nitrosodiphenylamine	--	--	--	--	<1.27	<1.24	--
Pentachlorophenol	--	--	--	--	<2.53	<2.49	--
Phenanthrene	--	--	--	--	<1.27	<1.24	--
Phenol	--	--	--	--	<1.27	<1.24	--
Pyrene	--	--	--	--	<1.27	<1.24	--
1,2,4-Trichlorobenzene	--	--	--	--	<1.27	<1.24	--
2,4,5-Trichlorophenol	--	--	--	--	<1.27	<1.24	--
2,4,6-Trichlorophenol	--	--	--	--	<1.27	<1.24	--
Pentachlorophenol	<0.236	<0.238	<0.236	<0.239	<0.253	<0.249	<0.240

-- Not analyzed
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

	FILTERED						
ANALYTE	SPMD-1 (filtered)	SPMD-2 (filtered)	SPMD-5 (filtered)	SPMD-11 (filtered)	SPMD-15 (filtered)	SPMD-15 (duplicate) (filtered)	SPMD-20 (filtered)
Date Sampled	9/12/2002 10:00	9/12/02 10:55	9/12/2002 17:10	9/12/2002 16:00	9/12/2002 15:00	9/12/2002 15:00	9/12/2002 13:40
NWTPH-Dx							
TPH Diesel Range	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--
PAHs (8250-SIM)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
2-Chloronaphthalene	--	--	--	--	--	--	--
9H-Fluorene	--	--	--	--	--	--	--
Acenaphthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Acenaphthylene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Anthracene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]anthracene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]pyrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[g,h,i]perylene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[b]fluoranthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[k]fluoranthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Chrysene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Dibenz[a,h]anthracene	<0.0472	<0.0495	<0.0481	<0.0476	<0.0513	<0.0541	<0.0483
Dibenzofuran	--	--	--	--	--	--	--
Fluoranthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0595**	<0.0242
Fluorene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Ideno[1.2,3-cd]pyrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Naphthalene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Naphthalene, 1-methyl-	--	--	--	--	--	--	--
Naphthalene, 2-methyl-	--	--	--	--	--	--	--
Phenanthrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Pyrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0423**	<0.0242
Retene	--	--	--	--	--	--	--
SVOCs (EPA 8270C)							
Acenaphthene	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--
Benzo[a]anthracene	--	--	--	--	--	--	--
Benzo[a]pyrene	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	--	--	--	--	--	--	--
Benzo[b]fluoranthene	--	--	--	--	--	--	--
Benzo[k]fluoranthene	--	--	--	--	--	--	--
Benzoic Acid	--	--	--	--	--	--	--
Benzyl Alcohol	--	--	--	--	--	--	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	--	--	--	--	--
2-Chlorophthalene	--	--	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	--	--

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

	FILTERED						
ANALYTE	SPMD-1 (filtered)	SPMD-2 (filtered)	SPMD-5 (filtered)	SPMD-11 (filtered)	SPMD-15 (filtered)	SPMD-15 (duplicate) (filtered)	SPMD-20 (filtered)
Date Sampled	9/12/2002 10:00	9/12/02 10:55	9/12/2002 17:10	9/12/2002 16:00	9/12/2002 15:00	9/12/2002 15:00	9/12/2002 13:40
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--
SVOCs (EPA 8270C)							
Di-n-butyl phthalate	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--
Dibenz[a.h]anthracene	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
3,3'-Dichlorobenzene	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--	--	--
2,4-Dnintrotoluene	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--	--	--
Hexachloroethane	--	--	--	--	--	--	--
Ideno[1.2.3-cd]pyrene	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--
3-,4-Methylphenol	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--
Pentachlorophenol	<0.236	<0.248	<0.240	<0.238	<0.256	<0.270	<0.242

-- Not analyzed
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 1b Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-1 (mg/L)	SED-2 (mg/L)	SED-3 (mg/L)	SED-4 (mg/L)	SED-5 (mg/L)	SED-6 (mg/L)	SED-7 (mg/L)	SED-8 (mg/L)	SED-9 (mg/L)	SED-51 (5A) (mg/L)
Date Analyzed	9/5/2002	9/5/2002	9/6/2002	9/6/2002	9/5/2002	9/6/2002	9/5/2002	9/5/2002	9/6/2002	9/5/2002
Arsenic	*	*	*	*	*	*	*	*	*	*
Chromium	*	*	*	*	*	*	*	*	*	*
Copper	*	*	*	*	*	*	*	*	*	*
Zinc	*	*	*	*	*	*	*	*	*	*
Total Suspended Solids	10.0	12.0	4.40	4.42	9.68	24.8	8.40	41.6	29.4	--
	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
Mercury	237	1370	187	89.0	249	201	1480	403	929	855

* Results pending

-- Not analyzed

J reported value is an estimate

Surface water grab samples collected by EPA dive team in September 2002. Samples collected approximately 1 foot off river bottom. Samples analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 1b Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*Analyzed 9/18/2002*						
	SPMD-1 grab (mg/L)	*SPMD-2 grab (mg/L)*	*SPMD-5 grab (mg/L)*	*SPMD-11 grab (mg/L)*	*SPMD-15 grab (mg/L)*	*SPMD-15 grab (duplicate) (mg/L)*	*SPMD-20 grab (mg/L)*
Date Analyzed	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*
Arsenic	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium	<0.00100	<0.00100	<0.00100	**0.00101**	<0.00100	**0.00300**	<0.00100
Copper	**0.00376**	**0.00207**	**0.00584**	**0.0256**	<0.00200	**0.00951**	**0.00362**
Zinc	**0.00767**	**0.00509**	**0.00602**	**0.0169**	<0.00500	**0.0221**	**0.00710**
Total Suspended Solids							
Mercury	--	--	--	--	--	--	--

-- Not analyzed

J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 1b Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*Analyzed 9/23/2002*						
	SPMD-1 grab (mg/L)	*SPMD-2 grab (mg/L)*	*SPMD-5 grab (mg/L)*	*SPMD-11 grab (mg/L)*	*SPMD-15 grab (mg/L)*	*SPMD-15 grab (duplicate) (mg/L)*	*SPMD-20 grab (mg/L)*
Date Analyzed	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*
Arsenic	<0.00100	**0.00121**	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Copper	**0.00257**	**0.00177**	**0.00154**	**0.00217**	**0.00141**	**0.00147**	**0.00191**
Zinc	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Total Suspended Solids							
Mercury	--	--	--	--	--	--	--

-- Not analyzed

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 2a Sediment Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-1 (ug/kg)	SED-2 (ug/kg)	SED-3 (ug/kg)	SED-4 (ug/kg)	SED-5 (ug/kg)	SED-6 (ug/kg)	SED-7 (ug/kg)	SED-8 (ug/kg)
Date Sampled	*9/5/2002*	*9/5/2002*	*9/6/2002*	*9/6/2002*	*9/5/2002*	*9/6/2002*	*9/5/2002*	*9/5/2002*
NWTPH-Dx								
TPH Diesel Range	--	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--	--
PAHs (8250-SIM)								
2-Chloronaphthalene	<208	<8.0	<206 J	<7.2	<93.2	<9.1	<12.2	<10.7
9H-Fluorene	**44900**	**7.0**	**616 J**	**656**	**1600**	**431**	**1530**	**41.3 J**
Acenaphthene	**48800**	**3.4 J**	**1720 J**	**274**	**2130**	**405**	**1370**	**18.6 J**
Acenaphthylene	**161**	**2.4 J**	**113 J**	**19.7**	<46.6	**14.8**	**29.3**	**6.7 J**
Anthracene	**23300**	**6.7**	**157 J**	**526**	**466**	**213**	**1480**	**31.8 J**
Benzo[a]anthracene	**13200**	**29.5**	**36 J**	**787**	**380**	**333**	**844**	**90.7 J**
Benzo[a]pyrene	**4930**	**17.1**	**16.0 J**	**298**	**146**	**181**	**452**	**55.9 J**
Benzo[g,h,i]perylene	**1120**	**11.9**	<11.9 J	**93.3**	**47.9**	**68.2**	**207**	**32 J**
Benzo[b]fluoranthene	**6300**	**25.1**	**16.4 J**	**632**	**250**	**373**	**558**	**99.9 J**
Benzo[k]fluoranthene	**4740 J**	**16.9 J**	**10.1 J**	**419**	**178 J**	**199**	**327 J**	**69.3 J**
Chrysene	**12700**	**33.3**	**35.4 J**	**999**	**408**	**339**	**861**	**92.2 J**
Dibenz[a,h]anthracene	**243 J**	**1.3 J**	<23.8 J	**64.3 J**	<93.2	**40.3 J**	**93.0 J**	**17.6 J**
Dibenzofuran	**2310**	**5.3**	**589 J**	**262**	**543**	**250**	**694**	**27.2 J**
Fluoranthene	**57700**	**65.9**	**306 J**	**5250 J**	**1300**	**1020**	**3790**	**203 J**
Ideno[1,2,3-cd]pyrene	**1590**	**12.5**	<23.8 J	**139**	**63.7 J**	**92.4**	**218**	**37.9 J**
Naphthalene	**3180**	**12.2**	**241000 J**	**310**	**832**	**495**	**810**	**41.4 J**
Naphthalene, 1-methyl-	**18800**	**2.2 J**	**3860 J**	**79.1**	**189**	**88.1**	**314**	**8.9 J**
Naphthalene, 2-methyl-	**1890**	**5.0**	**5910 J**	**129**	**292**	**162**	**508**	**16.6 J**
Phenanthrene	**94300**	**18.8**	**956 J**	**2450**	**2280**	**668**	**4310**	**61.5 J**
Pyrene	**31000**	**48.1**	**223 J**	**2290**	**683**	**525 J**	**1990**	**148 J**
Retene	**55500**	**69.6**	**43300 J**	**71.4**	**4450**	**57.7**	**399**	**93.7 J**
Pentachlorophenol	**27**	<1.6	**360**	**20**	**3.7**	**58**	**630**	**24**

-- Not analyzed

Sediment samples with the prefix SED were collected by EPA dive team on September 5 and 6, 2002. The sample with the prefix EPA (SH) was collected by EPA shoreline team on September 10 ,2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 2a Sediment Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-9 (ug/kg)	SED-51 (5A) (ug/kg)	EPA (SH) 6 (ug/kg)	MHBA1-1 (mg/kg)	MHBA1-3 (mg/kg)	MHBA2-1 (mg/kg)	MHBA2-2 (mg/kg)
Date Sampled	*9/6/2002*	*9/5/2002*	*9/10/2002*	*9/5/2002 13:10*	*9/5/2002 12:28*	*9/5/2002 13:00*	*9/5/2002 12:48*
NWTPH-Dx							
TPH Diesel Range	--	--	--	<25.0	**27.30**	<25.0	<25.0
TPH Heavy Oil Range	--	--	--	<50.0	<50.0	<50.0	<50.0
PAHs (8250-SIM)							
2-Chloronaphthalene	<12.7	<9.0	<77.9	--	--	--	--
9H-Fluorene	**779**	**355 J**	**14900**	--	--	--	--
Acenaphthene	**902**	**440 J**	**14800**	--	--	--	--
Acenaphthylene	**30.1**	**5.3 J**	**81.4**	--	--	--	--
Anthracene	**358**	**110 J**	**8420**	--	--	--	--
Benzo[a]anthracene	**485**	**201 J**	**3380**	--	--	--	--
Benzo[a]pyrene	**230**	**84 J**	**763**	--	--	--	--
Benzo[g,h,i]perylene	**82.1**	**25.1 J**	**139**	--	--	--	--
Benzo[b]fluoranthene	**383**	**130 J**	**1010**	--	--	--	--
Benzo[k]fluoranthene	**235**	**86.8 J**	**840**	--	--	--	--
Chrysene	**565**	**190 J**	**2750**	--	--	--	--
Dibenz[a,h]anthracene	**17.2 J**	**14.6 J**	**126**	--	--	--	--
Dibenzofuran	**489**	**152 J**	**11600**	--	--	--	--
Fluoranthene	**2850**	**892 J**	**20300**	--	--	--	--
Ideno[1,2,3-cd]pyrene	**110**	**32.8 J**	**221**	--	--	--	--
Naphthalene	**2100**	**651 J**	**3990**	--	--	--	--
Naphthalene, 1-methyl-	**479**	**91.0 J**	**4970**	--	--	--	--
Naphthalene, 2-methyl-	**1130**	**175 J**	**5640**	--	--	--	--
Phenanthrene	**2180**	**887 J**	**35000**	--	--	--	--
Pyrene	**1240 J**	**399 J**	**9600**	--	--	--	--
Retene	**237**	**12500 J**	**139**	--	--	--	--
Pentachlorophenol	**26**	**2.8**	**130**	--	--	--	--

-- Not analyzed

Sediment samples with the prefix MHBA were collected by DEQ on September 5, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed at North Creek Analytical, Inc. Portland, Oregon. Laboratory data sheets are provided in Appendix B.

Table 2b Sediment Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

Sample ID	Date Sampled	Total Organic Carbon	Mercury
SED-1	*9/5/2002*	*(mg/Kg)*	*(mg/Kg)*
SED-2	*9/5/2002*	**27000**	**0.238**
SED-3	*9/6/2002*	**360**	**0.0251**
SED-4	*9/6/2002*	**260000**	**0.0435**
SED-5	*9/5/2002*	**2800**	<0.020
SED-6	*9/6/2002*	**6100**	**0.0360**
SED-7	*9/5/2002*	**6500**	**0.627**
SED-8	*9/5/2002*	**13000**	**0.0617**
SED-9	*9/6/2002*	**16000**	**0.0733**
SED-51 (5A)	*9/5/2002*	**15000**	**0.109**
EPA (SH) 6	*9/10/2002*	--	**0.0272**

-- Not analyzed

Sediment samples with the prefix SED were collected by EPA dive team on September 5 and 6, 2002. The sample with the prefix EPA (SH) was collected by EPA shoreline team on September 10 ,2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 3a Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-3	SED-4	SED-5	SED-7	SED-51 (5A)	Beach B-1 (EPA-SH-1)	EPA (SH) 2	EPA (SH) 3	EPA (SH) 4	EPA (SH) 5
Date Sampled	*9/6/02*	*9/6/02*	*9/5/02*	*9/5/02*	*9/5/02*	*9/10/02*	*9/10/02*	*9/10/02*	*9/10/02*	*9/10/02*
NWTPH-Dx										
TPH Diesel Range	--	--	--	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--	--	--	--
PAHs (8250-SIM)	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*
2-Chloronaphthalene	<0.13	<0.037	<0.038	<0.039	<0.058	<0.040	<0.040	<0.043	<0.043	<0.041
9H-Fluorene	**39.0**	**1.9**	**6.7**	**0.30**	**18.4**	<0.020	**11.0**	**0.02 J**	**0.077**	**0.89**
Acenaphthene	**104**	**6.6**	**25.4**	**8.5**	**65.5**	<0.020	**19.3**	**0.048**	**3.4**	**9.5**
Acenaphthylene	**0.24**	<0.019	**0.024**	<0.020	**0.046**	<0.020	**0.067**	<0.021	<0.021	**0.062**
Anthracene	**3.5**	**0.42**	**0.35**	**0.048**	**0.98**	<0.020	**0.17**	**0.012 J**	**0.042**	**0.11**
Benzo[a]anthracene	**0.23**	**0.39**	**0.040**	**0.011 J**	**0.21**	<0.040	**0.014 J**	<0.043	<0.043	**0.017 J**
Benzo[a]pyrene	**0.049**	**0.033 J**	<0.038	<0.039	**0.061**	<0.040	<0.040	<0.043	<0.043	<0.041
Benzo[g,h,i]perylene	**0.0089 J**	<0.019	<0.019	<0.020	**0.037**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[b]fluoranthene	**0.058**	**0.069**	<0.019	<0.020	**0.075**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[k]fluoranthene	**0.043**	**0.034**	<0.019	<0.020	**0.056**	<0.020	<0.020	<0.021	<0.021	<0.020
Chrysene	**0.19**	**0.34**	**0.037 J**	**0.01 J**	**0.17**	<0.040	**0.013 J**	<0.043	<0.043	**0.014 J**
Dibenz[a,h]anthracene	<0.037	<0.037	<0.038	<0.039	<0.038	<0.040	<0.040	<0.043	<0.043	<0.041
Dibenzofuran	**28.3**	**0.066**	**5.3**	**0.18**	**14.9**	<0.020	**4.2**	<0.021	**0.052**	**0.55**
Fluoranthene	**3.1**	**3.3**	**0.48**	**0.077**	**1.7**	<0.020	**0.17**	**0.0096 J**	**0.018 J**	**0.17**
Fluorene	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	<0.037	<0.037	<0.038	<0.039	**0.036 J**	<0.040	<0.040	<0.043	<0.043	<0.041
Naphthalene	**2.8**	<0.074	**0.17**	**0.46**	**0.35**	<0.030	<0.056	<0.039	<0.021	**1.2**
Naphthalene, 1-methyl-	**63.2**	**0.030**	**18.4**	**0.62**	**51.5**	<0.020	**0.20**	<0.021	<0.021	**1.0**
Naphthalene, 2-methyl-	**6.4**	**0.017 J**	**2.1**	**0.37**	**3.5**	<0.020	<0.020	<0.021	<0.021	**0.29**
Phenanthrene	**33.3**	**5.1**	**3.4**	**0.27**	**11.1**	<0.020	**0.043**	**0.017 J**	**0.019 J**	**0.26**
Pyrene	**1.6**	**1.8**	**0.20**	**0.041**	**0.73**	<0.020	**0.16**	**0.069**	**0.035**	**0.070**
Retene	**0.35**	<0.019	**0.79**	**0.012 J**	**5.4**	<0.020	<0.020	<0.021	<0.021	<0.020
SVOCs (EPA 8270C)										
Acenaphthene	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzoic Acid	--	--	--	--	--	--	--	--	--	--
Benzyl Alcohol	--	--	--	--	--	--	--	--	--	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	--	--	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	--	--	--	--	--	--	--	--
2-Chlorophthalene	--	--	--	--	--	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	--	--	--	--	--
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-3	SED-4	SED-5	SED-7	SED-51 (5A)	Beach B-1 (EPA-SH-1)	EPA (SH) 2	EPA (SH) 3	EPA (SH) 4	EPA (SH) 5
Date Sampled	9/6/02	9/6/02	9/5/02	9/5/02	9/5/02	9/10/02	9/10/02	9/10/02	9/10/02	9/10/02
SVOCs (EPA 8270C)										
Chrysene	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
3,3'-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--	--	--	--	--	--
2,4-Dnintrotoluene	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--	--	--	--
3-,4-Methylphenol	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	<0.019	<0.019	<0.019	<0.020	<0.019	<0.020	<0.020	<0.021	<0.021	<0.020

-- Not Analyzed; * Results pending

J reported value is an estimate

Pore water samples with prefix SED were collected by EPA dive team on September 5 and 6, 2002. Samples with prefix EPA (SH) were collected by EPA shoreline team on September 10, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples analyzed by EPA Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	EPA (SH) 7	EPA (SH) 8	CreoDock N. Drum	CreoDock North-Flux	CreoDock S. Drum	FWDA -Flux	WC1-Flux	WC-Blue-Flux
Date Sampled	9/10/02	9/10/02	9/10/2002 17:10	9/11/2002 7:10	9/10/2001 15:27	9/10/2002 15:15	9/10/2002 14:10	9/11/2002 8:15
NWTPH-Dx			(mg/L)	(mg/L)		(mg/L)	(mg/L)	
TPH Diesel Range	--	--	**0.208**	0.201	--	0.0610	1.10	--
TPH Heavy Oil Range	--	--	<0.0966	<0.102	--	<0.0957	0.128	--
PAHs (8250-SIM)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
2-Chloronaphthalene	<0.041	<25.0	--	--	--	--	--	--
9H-Fluorene	**0.047**	**18900**	--	--	--	--	--	--
Acenaphthene	**10.3**	**23800**	**14.7**	**18.1**	<0.100	<0.100	**71.8**	**0.564**
Acenaphthylene	**0.11**	**141**	<1.00	**0.217**	**0.151**	<0.100	<2.50	**0.188**
Anthracene	**0.20**	**10200**	<1.00	**0.222**	<0.100	<0.100	**4.62**	<0.100
Benzo[a]anthracene	**0.011 J**	**2090**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[a]pyrene	<0.041	**699**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[g,h,i]perylene	<0.020	**115**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[b]fluoranthene	<0.020	**969**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[k]fluoranthene	<0.020	**599**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Chrysene	**0.024 J**	**2270**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Dibenz[a,h]anthracene	<0.041	**95.2 J**	<2.00	<0.200	<0.200	<0.200	<5.00	<0.200
Dibenzofuran	**5.7**	**14500**	--	--	--	--	--	--
Fluoranthene	**0.26**	**13600**	<1.00	**0.227**	<0.100	<0.100	**6.05**	**0.405**
Fluorene	--	--	**1.59**	**1.64**	<0.100	<0.100	**31.8**	<0.100
Ideno[1,2,3-cd]pyrene	<0.041	**181**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Naphthalene	**0.21**	**421000**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Naphthalene, 1-methyl-	**0.033**	**25800**	--	--	--	--	--	--
Naphthalene, 2-methyl-	**0.019 J**	**43300**	--	--	--	--	--	--
Phenanthrene	**0.090**	**32000**	<1.00	**0.637**	<0.100	<0.100	<2.50	<0.100
Pyrene	**0.097**	**6170 J**	<1.00	**0.120**	<0.100	<0.100	**3.44**	**0.251**
Retene	<0.020	**74.7**	--	--	--	--	--	--
SVOCs (EPA 8270C)								
Acenaphthene	--	--	**17.3**	**22.1**	--	<5.00	**70.7**	--
Acenaphthylene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Anthracene	--	--	<5.00	<5.00	--	<5.00	**5.31**	--
Benzo[a]anthracene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[a]pyrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[g,h,i]perylene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[b]fluoranthene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[k]fluoranthene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzoic Acid	--	--	<50.0	<50.0	--	<50.0	<50.0	--
Benzyl Alcohol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
4-Bromophenyl phenyl ether	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Butyl benzyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Chloro-3-methylphenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Chloroaniline	--	--	<20.0	<20.0	--	<20.0	<20.0	--
Bis(2-chloroethoxy)methane	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Bis(2-chloroethyl)ether	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Bis(2-chloroisopropyl)ether	--	--	<10.0	<10.0	--	<10.0	<10.0	--
2-Chlorophthalene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Chlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Chlorophenyl phenyl ether	--	--	<5.00	<5.00	--	<5.00	<5.00	--

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	EPA (SH) 7	EPA (SH) 8	CreoDock N. Drum	CreoDock North-Flux	CreoDock S. Drum	FWDA -Flux	WC1-Flux	WC-Blue-Flux
Date Sampled	9/10/02	9/10/02	9/10/2002 17:10	9/11/2002 7:10	9/10/2001 15:27	9/10/2002 15:15	9/10/2002 14:10	9/11/2002 8:15
SVOCs (EPA 8270C)								
Chrysene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Di-n-butyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Di-n-octyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Dibenz[a,h]anthracene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Dibenzofuran	--	--	<5.00	<5.00	--	<5.00	**29.1**	--
1,2-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
1,3-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
1,4-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
3,3'-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4-Dichlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Diethyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4-Dimethylphenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Dimethyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4,6-Dinitro-2-methylphenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
2,4-Dinitrophenol	--	--	<25.0	<25.0	--	<25.0	<25.0	--
2,4-Dnintrotoluene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,6-Dinitrotoluene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Bis(2-ethylhexyl)phthalate	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Fluoranthene	--	--	<5.00	<5.00	--	<5.00	**7.13**	--
Fluorene	--	--	<5.00	<5.00	--	<5.00	**41.7**	--
Hexachlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Hexachlorobutadiene	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Hexachlorocyclopentadiene	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Hexachloroethane	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Ideno[1,2,3-cd]pyrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Isophorone	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Methylnaphthalene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Methylphenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
3-,4-Methylphenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Naphthalene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Nitroaniline	--	--	<5.00	<5.00	--	<5.00	<5.00	--
3-Nitroaniline	--	--	<10.0	<10.0	--	<10.0	<10.0	--
4-Nitroaniline	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Nitrobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Nitrophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Nitrophenol	--	--	<25.0	<25.0	--	<25.0	<25.0	--
N-Nitrosodi-n-propylamine	--	--	<10.0	<10.0	--	<10.0	<10.0	--
N-Nitrosodiphenylamine	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Pentachlorophenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Phenanthrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Phenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Pyrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
1,2,4-Trichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4,5-Trichlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4,6-Trichlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Pentachlorophenol	**0.36**	**2.5**	--	--	--	--	--	--

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	EPA (SH) 7	EPA (SH) 8	CreoDock N. Drum	CreoDock North-Flux	CreoDock S. Drum	FWDA -Flux	WC1-Flux	WC-Blue-Flux
Date Sampled	9/10/02	9/10/02	9/10/2002 17:10	9/11/2002 7:10	9/10/2001 15:27	9/10/2002 15:15	9/10/2002 14:10	9/11/2002 8:15
Tentatively Identified Compounds (GC/MS estimated concentrations)								
1-Methylnaphthanlene			ND	ND	--	ND	**19.8**	--
2,3-dihydro-1H-Iden-1-ol			ND	ND	--	ND	**38.3**	--
2,3-Dihydro-1H-Idene			ND	ND	--	ND	**45.5**	--
Carazole			ND	ND	--	ND	**13.9**	--
dimethylnaphtalene isomer @ 16.18			ND	ND	--	ND	**15.6**	--
dimethylnaphtalene isomer @ 16.39			ND	ND	--	ND	**19.5**	--
Trimethlybenzene isomer unknown @ 18.45			ND	ND	--	ND	**11.2**	--
unknown aromatic hydrocarbon @ 12.44			ND	ND	--	ND	**12.6**	--
unknown substituted aromatic hydrocarbon			ND	ND	--	ND	**19.2**	--
			ND	ND	--	ND	**29.3**	--

-- Not Analyzed; * Results pending

J reported value is an estimate

ND Not Detected

Pore water samples with prefix SED were collected by EPA dive team on September 5 and 6, 2002. Samples with prefix EPA (SH) were collected by EPA shoreline team on September 10, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples analyzed by EPA Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 3b Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

Sample ID	Mercury *(ng/L)*
SED-3	2.47
SED-4	0.947
SED-5	6.16
SED-7	4.19
SED-51 (5A)	9.94
Beach B-1 (EPA-SH-1)	1.29
EPA (SH) 2	0.501
EPA (SH) 3	0.867
EPA (SH) 4	1.02
EPA (SH) 5	5.87
EPA (SH) 7	1.12
EPA (SH) 8	--
CreoDock N. Drum	--
CreoDock North-Flux	--
CreoDock S. Drum	--
FWDA -Flux	--
WC1-Flux	--
WC-Blue-Flux	--

-- Not analyzed

Table 4 Groundwater Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	ODEQ (SH-1) (ug/L)	ODEQ (SH-2) (ug/L)	ODEQ (SH-3) (ug/L)	ODEQ (SH-4) (ug/L)	ODEQ (SH-5) (ug/L)	ODEQ (SH-6) (ug/L)	ODEQ (SH-7) (ug/L)	ODEQ (SH-8) (ug/L)	ODEQ (SH-9) (ug/L)
Date Sampled	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*
PAHs (8250-SIM)									
2-Chloronaphthalene	<21.7	<0.041	<0.039	<0.041	<0.22	<0.041	<0.34	<0.040	<0.14
9H-Fluorene	**8340**	**1.4**	**0.070**	**22.5**	**0.21**	**0.025**	**152**	**106**	**91.1**
Acenaphthene	**10100**	**1.3**	**0.040**	**42.1**	**1.5**	**3.0**	**222**	**163**	**118**
Acenaphthylene	**87.7**	<0.020	<0.020	**0.24**	<0.11	**0.025**	**0.57**	**0.44**	**0.35**
Anthracene	**4140**	**0.59**	**0.13**	**1.6**	**0.26**	**0.078**	**19.6**	**17.6**	**14.1**
Benzo[a]anthracene	**720**	**0.030**	**0.042**	**0.12**	<0.22	**0.026**	**0.28**	**0.36**	**0.76**
Benzo[a]pyrene	**180**	<0.041	<0.039	**0.018**	<0.22	**0.069**	**0.019**	**0.031**	**0.097**
Benzo[g,h,i]perylene	**29.2**	<0.020	**0.019**	<0.020	**0.071**	**0.054**	<0.020	<0.020	**0.012**
Benzo[b]fluoranthene	**264**	<0.020	**0.050**	**0.028**	<0.11	**0.046**	**0.022**	**0.046**	**0.15**
Benzo[k]fluoranthene	**157**	<0.020	**0.054**	**0.023**	<0.11	**0.032**	**0.024**	**0.040**	**0.099**
Chrysene	**533**	**0.048**	**0.075**	**0.095**	**0.11**	**0.023**	**0.21**	**0.29**	**0.62**
Dibenz[a,h]anthracene	**20.0**	<0.041	<0.039	<0.041	<0.22	<0.041	<0.040	<0.040	<0.040
Dibenzofuran	**5810**	**0.80**	**0.047**	**11.0**	**0.084**	<0.020	**134**	**94.3**	**70.0**
Fluoranthene	**4910**	**0.67**	**0.46**	**1.9**	**1.2**	**0.028**	**12.7**	**12.6**	**15.8**
Ideno[1,2,3-cd]pyrene	**46.0**	<0.041	**0.021**	<0.041	<0.22	**0.046**	<0.040	<0.040	**0.020**
Naphthalene	**62900**	**8.8**	<0.15	**1.4**	**0.38**	<0.069	**958**	**397**	**703**
Naphthalene, 1-methyl-	**14200**	**1.0**	**0.017**	**13.8**	<0.11	**0.10**	**269**	**205**	**170**
Naphthalene, 2-methyl-	**18000**	**1.9**	**0.027**	**1.5**	**0.068**	**0.022**	**259**	**166**	**167**
Phenanthrene	**11600**	**3.6**	**0.47**	**12.8**	**1.1**	**0.031**	**151**	**125**	**104**
Pyrene	**2110**	**0.30**	**0.21**	**0.89**	**0.52**	**0.025**	**5.2**	**5.7**	**6.2**
Retene	**12.3**	<0.020	<0.020	<0.020	<0.11	<0.020	<0.020	<0.020	<0.020
Pentachlorophenol	**1.1**	**0.021**	**0.20**	<0.020	<0.022	<0.020	<0.020	<0.020	<0.020

Groundwater samples were collected by DEQ using MHE samplers on September 11, 2002. Samples were analyzed by North Creek Analytical, Inc. Portland, Oregon. Laboratory data sheets are provided in Appendix B.